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THE
ANALYSIS
OF
INOCULATION:
COMPRIZING THE

HISTORY, THEORY, and PRACTICE of it:

With an occasional CONSIDERATION

OF THE

Most REMARKABLE APPEARANCES

IN THE

SMALL POX.

EIGENTHUM DER STADT AUGSBURG

By J. KIRKPATRICK, M. D.

——— quibus hunc lenire dolorem
Possis, et magnam morbi deponere partem. HOR.

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MDCCLIV.

MISCELLANY.

LIBRARY OF THE
MOUNT KENNABRAGE ATHENÆUM
OF LIFE.

MISCELLANY

IN THE

HISTORY, THEORY, AND PRACTICE OF

INOCULATION:

OR

VARIOLA

THE

TO THE
KING.

SIR!

HERE the following Endeavours to aſcertain and extend the moſt ſalutary Practice ever diſcover'd, for reſtraining the Fatality of a very loathſome and deſtroying Diſeaſe, executed ſuitably to the Zeal of their Author for the Completion

pletion of ſuch a diffuſive Good, there muſt be ſome Propriety in their aſpiring to the Patronage of a Monarch, whoſe early Admiſſion of the Practice among His Royal Progeny has eventually preſerved ſo many Thouſands of His Subjects, His political Children. The preſent Generation of Your Majeſty's Subjects for themſelves, and for their Offspring, acknowlege, that among innumerable Inſtances of the paternal Goodneſs and Vigilance of their KING, they can never forget the many happy Conſequences of His Sagacity and Reſolution on this Occaſion, which have very nearly expunged the Small Pox from the Catalogue of mortal Diſeaſes. A Diſeaſe, that, for many Centuries, was probably oftener exaſperated than aſſwaged by medical Application. What then muſt be the accumulated Gratitude of their Sons Sons! What extended Acknowlegements may not hence accrue from different Nations and Languages!

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The higheſt Glory of the exalted Rulers of the Earth, and the utmoſt Felicity of their ſubordinate Nations concur, when the ſole Cauſe and Suſtainer of the Univerſe diſpoſes the Heart of the KING. The Subject of the following Pages ſeems a pregnant Inſtance of the Divine Goodneſs, thus transfuſed to the great and opulent People Your Majeſty rules and protects: a People, whoſe true Reflexion glows with a moſt grateful Feeling of thoſe natural, thoſe religious and civil Rights, that were ſtrongly re-eſtabliſh'd by the Acceſſion of Your illuſtrious Houſe to the *Britiſh* Diadem. Conſcious of their juſt Inveſtment with the natural, but civilized and innoxious LIBERTY of Men, their Happineſs reflects the Dignity, and extends the Luſtre, of their ever gracious Sovereign and Guardian. DETTINGEN ſhall witneſs, and CULLODEN ſhall record, the Energy of Your Subjects, animated by their Royal, their Delivering Leaders; while every reaſonable

ſonable Individual fervently joins the Prayers of Your Great national Council, for that happy Length of Days to Your Majeſty, and that ceaſeleſs Succeſſion in Your illuſtrious Houſe, on which the durable Proſperity of Your Dominions, under the Divine Favour, ſo eſſentially depends.

Though the Purpoſe of a well-founded and extenſive Tranquillity has habitually engaged Your Majeſty's Attention ſince that Day, when even adverſe Fortune, diſtinguiſhing the heroic Ardour of WILLIAM, declared the half-receding Victor to dread, like *Pyrrhus*, the Hazard of repeating ſo dear-bought a Victory; yet other wholeſome and beneficent Schemes have been happily effected under Your benign Influence. This, like the Sun's, unlimited to a Region or Climate, has cheriſhed thoſe, whom foreign Superſtition had exiled, and endowed ſuch, as Bigotry hath oppreſſed with Rapine. And while

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the reflecting Neighbours of *Great Britain* admire, and pant after, that conſtitutional Happineſs, Your Majeſty patronizes, they candidly admit her Portion of Genius, her Acquiſitions in uſeful Science, fully equal at leaſt to thoſe of any People. Inſtances of this Truth are obvious and many; but it were difficult perhaps to adduce one more important than the great Improvement and Succeſs of Inoculation throughout Your extenſive Dominions; the wide Diffuſion of which Succeſs, flowing ſo eminently from Your Majeſty's, Your late Royal and moſt diſcerning Conſort's, and Your Royal Father's Sanction, may truly aſſert that healing Virtue of the Kings of *England* in Your illuſtrious Line, which former Ages had aſcribed to Your Royal Predeceſſors, in a leſs popular and acute Diſeaſe.

To have been born into a natural Subjection and Allegiance to Your Majeſty is that common Happineſs of Millions,

lions, which many others aſpire to enjoy by Adoption. But to be admitted, through Your moſt gracious Indulgence to theſe Endeavours for the Publick Health, to this diſtinguiſhing Oblation of them to Your Auguſt Preſence, is contemplated with the profoundeſt Veneration, the moſt awful Deference, of,

May it pleaſe Your Majeſty,

Your Majeſty's

moſt humbly dutiful,

and devoted Subject,

J. KIRKPATRICK.

PREFACE.

AS the enſuing Treatiſe contains the moſt faithful Account of the good and bad Effects of Inoculation, which the Experience of others, and my own have furniſhed me with, it muſt be unneceſſary to prefix any further medical Arguments concerning it; ſince after all poſſible Debate on the Practice, ſuch Effects are the Evidence, that muſt determine the Suffrage of each intelligent Reader for, or againſt, it.

But though the medical Objections to this Practice have long been diſſipated by its very general Conſequences, which could not fail in Time to ſettle even the popular Opinion concerning it, if the People were left to ſee and hear undiſguiſed Facts for themſelves, and to form their own unbiaſſed Reflexions on them; yet we have of late had ſome religious Objections to it revived by Writers, who, we are to ſuppoſe, think them well eſtabliſhed, and who eſteem it their Duty to inforce them with all their Influence: for if they are prompted by any inferior Motives, to the Oppoſition of ſo ſalutary a Practice, at proper Times and Places, they muſt be either weak Men or worſe. But if they really can make us as certain, as they are

poſitive themſelves, that our procuring this corporal Security againſt this perilous Diſeaſe is full of more important Peril to the Soul, I dare ſay that all, who have ſuperadded our religious Belief of its Immortality to that rational Perſuaſion of it, profeſſed by the beſt and wiſeſt Heathens, will unanimouſly deſiſt applying, or ſuffering, the Practice any longer. On the other Hand, if it ſhall appear, on a fair Enquiry, that the applying or admitting Inoculation, with the beſt human Precautions, and under a proper Frame of Mind, leaves the Soul, whatever the Event of Inoculation be, juſt in the ſame Degree of Security it found it, it will ſcarcely be controvertible, whether that Reaſon our heavenly Father has indued us with ſhould operate more ſtrongly towards our ſurer Preſervation of Life and Health, with Reſpect to this Diſeaſe; or our ill-grounded Fears and Miſapprehenſions, to the much greater Peril of them.

The earlieſt theological Combatant againſt Inoculation certainly ſet out with more Zeal than Knowlege, when, without debating about the Antiquity of the Small Pox, he came to the Matter at once, and roundly affirmed, the Devil inoculated *Job* with it. "He ſuppoſes * his Diſeaſe that Confluence of in-
"flammatory Puſtules, which, he obſerves, is now
"incident to moſt Men; that it might be conveyed
"to him by ſome ſuch Way as that of Inoculation;
"and concludes, that he does not ſee what can be ad-
"vanced to invalidate this Suppoſition." His calling it a diabolical Operation, the Operators diabolical, *Venefici*, and their Patients Atheiſts, *&c. &c. &c.* are neceſſary Conſequences of his firſt Aſſertion. A very prudent Man would certainly have attended impartially to the general Fruits of the Practice, and have informed himſelf more exactly about its different Properties

* *Mafſey*'s Sermon, P. 6.

Properties than the Rev. Mr. MASSEY did, before he pronounced ſo peremptorily concerning it. That his Intelligence of it was merely crude and popular is evident, from his affirming it no Security againſt a ſecond Infection; and his aſcribing the Practice of it to the *Turks*, for this extraordinary Reaſon too, becauſe they are Fataliſts; when our earlieſt Accounts of it from *Conſtantinople* tell us, "it was practiſed by the "*Greeks*, and among themſelves and the *Armenians*, "who are Chriſtians; and that the *Turks*, as Fataliſts, "rejected it," which happens to be a little more intelligible than their receiving it, as ſuch. But Abſurdities, like Misfortunes, ſeldom come alone. There is little Doubt however, but ſome of his Hearers, and Readers, really concluded the Devil had inoculated *Job*; the Conſequence of which Concluſion may be eaſily ſurmized, at a Time when the Practice was quite new here, the Prejudices againſt it greater, and the Evidence in its Favour leſs, than at preſent.

Notwithſtanding which a Diſſuaſive againſt Inoculation was printed here, 1751; and a Sermon againſt it preached at *Canterbury*, this Year 1753, is ſince printed, without either having been publickly * animadverted on that I have heard of: For my own Part I may with great Truth aver, I can diſcern no juſt Argument, no Force, in thoſe Objections; ſo that the vital Security of ſuch, as might miſtake their Affirmations for Arguments, and their Miſrepreſentations for Facts, is the real Motive of my endeavouring to expoſe their Futility and Impertinence.

The Sermon affirms literally, P. 8, 9. "It will be "hard to produce out of the *huge* Syſtem of *hurtful* "Inventions ever an Inſtance big with *more* Infidelity "and Atheiſm, than this of Inoculation." This is

* This Preface was at Preſs, before Mr. *Bolaine*'s reaſonable Anſwer to this Sermon was publiſhed.

the old Device of mixing Heaven and Earth, and indeed Hell too, in the Quarrel; and to cite it appears its ſufficient Refutation. Since, to omit the Importance and Number of the Inoculated, had the Author ſpent a few Minutes Reflection on the religious and moral Characters of many who have been inoculated themſelves, or employed it in their Families; and who have further promoted the Practice from the moſt generous and diſintereſted Motives, any State of Mind, ſhort of utter Malignity or Diſtraction, muſt have prevented him from paſſing, in ſo ſolemn a Situation, ſo truly unchriſtian a Cenſure on Numbers, who are fully as remote from Infidelity and Atheiſm as himſelf, and have evidenced at leaſt equal Faculties to diſtinguiſh what are, and are not, ſuch. This is *Anathema*, *Maranatha*, with a Witneſs, and not unlike Lord *Peter*'s plain Argument in Defence of Tranſubſtantiation. As it neceſſarily arraigns me, among much better Company, with the Practice of Infidelity and Atheiſm, I muſt aver I conſider it in a very oppoſite Light, without which I had never practiſed nor promoted it. Many, to my certain Knowlege, admit, and others apply it, under a lively Dependance, that they are uſing a Method diſcovered by Providence, for a much more general Preſervation from the Mortality of the Small Pox, than mere Art ever did, or probably ever will, effect in that, or in any other Diſeaſe of equal Fatality. The generally mild Progreſs and happy Event of it conſpire with Religion and Reaſon, to excite the Gratitude and Devotion of the Patient and the Beholders, and induce the revering and honeſt Phyſician to exclaim with *Japis* in *Virgil*,

Non haec humanis opibus, non arte magiſtra,
Proveniunt ——

Indeed

Indeed could human Penetration in this Life ſurvey and eſtimate the Scenes of Futurity, it ſeems more probable than otherwiſe, that our ſtrong Solicitude for a long Inhabitation of the preſent would ſenſibly diminiſh; whence all Remedies, except thoſe againſt preſent acute Pain, would be leſs attended to. But His ſupreme Wiſdom, who has limited our Knowlege here, tho' not our Hopes, to this Planet, having willed our Reſidence on it for a Term unknown to us, has moſt benignly implanted that ardent Deſire of Length of Days in us, that makes our Duty, our Obedience to his Will, in this one Reſpect at leaſt, the ſtrongeſt Paſſion in our Nature. *All a Man has will he give for his Life.* What Wonder then that he ſhould embrace the faireſt Chance for the Continuance of it? Can it therefore be conſiſtently inferred, that our Exertion of this Self-preſervation againſt the Pain and Mortality of an acute Diſeaſe is irreligious and derogatory to the Honour of GOD? Or can any one ſuppoſe Him incenſed with us, in ſuch a Situation, for an Adherence to that Impreſſion He has ſo deeply ſtampt into our Eſſence; that when Perſons, in Violation of it, become Suicides, we ſuppoſe them under an utter Eclipſe of the reaſonable Soul? And if this be Madneſs, is not the Reverſe conſiſtent with a Sanity of the Mind, and an Obedience to that earlieſt Impreſſion of the Creator?

But with what ſtill greater Perverſity muſt others aſcribe a vital Diſcovery, that has never been traced up to its firſt human Inſtrument, to the Spirit of Malignity and Falſhood! Has that evil Principle, whom the Scripture terms *a Murderer from the Beginning*, ſo altered his Nature, as to become beneficent to Men! And does the wonted *Giver of all good Gifts*, the Inſpirer of all uſeful Knowlege, but ſhew this efficacious Practice to tantalize, or inſnare, wretched

Mortals? Or if it really were the tempting Device of Satan, will He, who has declared himſelf a *jealous God, and in whoſe Hands are the Iſſues of Life*, ſuffer this Device to triumph ſo manifeſtly over that Diſeaſe, which has ſometimes been aſcribed, with others, to his immediate and judicial Infliction? Doth He, who came *to ſave, and not to deſtroy*, and who bids us *judge of every Tree by its Fruits* (which ſeems unſtrainedly applicable to Practices and Cuſtoms as well as Men) deem us culpable for attending to, and being determined by, the very general Fruits of a Practice, ſo inconteſtably favourable to Life?

At the ſame Time it is readily allowed, that Self-Preſervation may and ought laudably to be poſtponed, whenever our Duty to GOD, to our Country, our Friend, or Neighbour, demands the Riſque, and even Loſs of the preſent Life; which is not a Loſs of Exiſtence, but a different Mode or Locality of it; and when thus dutifully and nobly exchanged, under an humbling Senſe of our manifold Infirmities, may ſo probably be a Change for the better. But expoſing our Lives to a Diſtemper, which, accidentally taken, deſtroys, upon a fair Calculation, full fifteen (and ſuppoſe it were much leſs) for one that fails by this Application of it, cannot appear to any Perſon, of an unwarped Underſtanding, a Duty in any of theſe Regards; where our Death can anſwer no evident good Purpoſe, tho' it may ſenſibly affect, or even prejudice, others. *In the Grave none can praiſe* GOD, and the Deceaſed are loſt to every ſublunary Duty and Relation. As to the Impiety that has been ſuggeſted in attempting to elude or ſoften this Scourge of the Almighty; tho' we do not conteſt, but that He may ſometimes inflict this morbid Viſitation, as the Scriptures inform us He has others (for who ſhall enter into his Counſels!) yet it ſeems highly rational, and by

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no means irreligious, to infer, that in the ordinary Courſe of his Providence he leaves ſecondary Cauſes to their neceſſary Operation and Effects. Whether we ſurvive to the utmoſt Term, we were formed to exiſt in this State, or abridge it through our own Folly or Intemperance, by Accident or Contagion, the Creating Cauſe, preconſcious of the full and ultimate Completion of his wiſe and gracious Purpoſes in our Creation, moſt probably commits intermediate Events, that appear very important to our narrow Comprehenſion, to the Vicegerency of Nature; and

— ſees with equal Eye, as God of all,
A Hero periſh, or a Sparrow fall.

Yet, as with Regard to our future State, He hath ſet Life and Death, Good and Evil before us, to ſelect, as free and rational Agents; ſo, with Reſpect to the preſent Diſeaſe, He has manifeſtly permitted us to ſee the Evidence of two different Modes and Events of receiving it, and freely left us (as I apprehend for my own Part, with the utmoſt Reverence and Gratitude) to make our reaſonable, and even religious, Option. For ſuch then, as cannot avoid conſidering Inoculation in this Light, it is ſurely religiouſly lawful at leaſt, if not incumbent, to receive and apply it: while they leave thoſe who conceive or embrace very oppoſite Sentiments of it, to enjoy unblamed (and even with an Approbation of their Sincerity and Conſiſtence in abſtaining from it) that Liberty of purſuing the Dictates of their Conſcience, which the Friends of Inoculation think they have a reciprocal Right of doing unimpeached.

But this they are not permitted to do; *they are reviled, tho' they revile not*; and while they conſider their Antagoniſts but as miſtaken, they are charged with Impiety, Infidelity, and Atheiſm, in practiſing

or admitting what has been termed, contrary to all Probability, a diabolical Invention. Now Perſons who erect themſelves into ſuch cenſorial Importance; who are ſo ready to tax the Conduct of their * Superiors; and are ſo liberally indued with the cheap and humble Rhetoric of calling Names, ought to have a truly rational Conviction, that when they call Perſons and Practices by ſuch bitter ones, they are not miſcalling them, by thoſe eſſentially oppoſite to their true Nature and Characters. Were Truth on their Side, would this be *contending for it in the Spirit of Meekneſs*, which indeed ſo frequently accompanies it? But, as the plain Evidence of innumerable Facts are againſt them, has it not a much ſtronger Appearance of perſiſting obſtinately againſt the Truth, with the Spirit of Bitterneſs and Execration? We ſay *Appearance*, becauſe, as He alone who made the Heart can judge of it, we chuſe to credit this Writer with a religious Zeal for what he thinks the Truth on this Occaſion; for if we do not allow his Diſcourſe this intentional Merit, we can certainly allow it none. But a blind Zeal, tho' *called religious*, if it may have deſtroyed fewer than Ambition, has deſtroyed them more cruelly. Thoſe violent Spirits, who, within a few Centuries paſt, committed Numbers to the Flames here, for their conſcientious Adherence to plain Chriſtian Truths; and influenced the like Cruelty on the Continent, to the Deſtruction of many Thouſands, had ſufficient Zeal, ſuch as it was, to plead for it. Indeed without this they muſt have been greater Monſters than *Nero* himſelf, who, we have never heard, pleaded a Commiſſion, even from his Pagan Deities, for acting like a Devil incarnate. How much more probably and amiably does the good Archbiſhop TILLOTSON ſuppoſe Charity the Criterion of Truth in

* See Sermon, P. 5.

in a religious Syſtem! For, however we may be miſled by Names, all Zeal, that is really cruel and uncharitable, is *eſſentially irreligious*. We do not intend here to form a Compariſon between the Opponents of Inoculation and the bloody Anti-Reformers; but to evince the unwarrantable Lengths of a blind intemperate Zeal, which has moſt generally been employed in the Support of Error too. Neither are we diſpoſed to retort the Deviliſm, the Anti-Inoculators have aſcribed to us, on themſelves, tho' ſurely it might be done with at leaſt equal Juſtice; ſince next to deſtroying Life ſeems to be preventing an Interpoſition to ſave it.

But what Principle, what Zeal, can warrant ſuch a groſs Miſrepreſentation of Facts, ſuch plain Falſhoods, as this Author allows himſelf in! To give a few Inſtances out of many, he ſays, P. 20, "that In-
" oculation ſecures us againſt no one Danger we are
" in the natural Way expoſed to; affords no one real
" Advantage that may not be had in the common
" Management of the Diſeaſe; and is ſubject to ma-
" ny Inconveniences and Evils, which, in the regu-
" lar Courſe of Things, we are either quite free from,
" or but ſlightly affected with." P. 21, 22, "It
" may be maintained that Adults, if naturally of a
" *good Conſtitution*, and ſuch as have not impaired *that*
" Conſtitution, or are not at the Time under any bo-
" dily Indiſpoſition occaſioned by Intemperance or
" other Vices, have as good a Chance for their Life
" in the *natural*, as Children have in the *unnatural*
" Way, and perhaps a *better*, *&c.*" P. 23, "As
" to the *Cure* which Inoculation furniſhes for thoſe
" *Fears* Perſons are apt to lie under till they have
" gone thro' the Trial; and the *Certainty* of the Diſ-
" eaſe proving in this Way *leſs ſevere and leſs mortal*;
" theſe, tho' urged as *ſingular* Recommendations of
" this Practice, ſeem however to be no better than

" *mere*

" *mere* Pretences." P. 26, " There is then moſt " evidently no one *peculiar*, *real* Advantage gained " by ſubmitting to this *deceitful* Trial; nor any the " *leaſt* Security againſt the Dangers incident to the " Diſtemper in the *natural* Way."

It is ſuperfluous to give any Anſwer to ſuch groſs Miſtakes, or worſe. But we may well query, if the Preacher reflected where he ſaid them? and who adviſed, or rather ſentenced, him to publiſh them? Yet, to make the Practice ſome Amends for the hard Words he has given it, he has oppos'd it with very tender Arguments. His comparing the Admiſſion of * Inoculation to a Man's conſenting to have his Legs broke, by way of preventing any ſubſequent Fractures of them, which he calls a parallel Caſe, is ſuch a Parallel indeed, as would not have occurr'd to every Body; and is nearly as ingenious as Mr. MASSEY's aſcribing the Longævity of the Antediluvians to their Phyſicians profounder Knowlege of Minerals and Vegetables. Such pretty Conceits, however, are ſufficient to gauge the Depth of the Fountains they ſpring from.

The anonymous Author of *A Diſſuaſive againſt inoculating for the Small Pox* is a more reſerv'd, and, at the firſt Appearance, a more temperate Writer. His having ſome Elegance and Addreſs, and his ſuppoſing the general Succeſs of Inoculation, which he is too prudent to diſpute, have a Tendency to inſinuate him into ſuch Company, as could not digeſt the groſs Contradictions, and coarſe Dialect, of the Sermon. His theological Arguments againſt it, however, are pretty much the ſame, it being founded, according to his Creed, in Preſumption, Turpitude, Malignity, and even Idolatry. But ſurely the hunted Hare, he gives ſo lively a Deſcription of from a *Latin* Poet, is not reduced to more Shifts than this artful Writer is, in endeavouring to enforce ſuch Aſſeverations by any juſt Argu-

* Serm. P. 24, 25.

Arguments. There is a great deal of Scripture quoted on the Occaſion, which wants nothing but a right Application. Thus, for his Mottos to the *Parallel between Divine Reſignation and Inoculation* (and Mottos are generally ſelected for being very pat and ſignificant) he has choſen the following Texts, *viz.* " *He that loveth Father or Mother more than me, is not worthy of me; and he that loveth Son or Daughter more than me, is not worthy of me.—He that findeth his Life ſhall loſe it, and he that loſeth his Life for my Sake ſhall find it.—Speaking the Truth in* Love."

Now who diſputes the Truth and Significance of the two former, on the Occaſion they were uttered by our Saviour? the firſt of them declaring the Right which all had to embrace the Goſpel and become his Diſciples, notwithſtanding the Oppoſition of their neareſt Relations, to whom they owed, in all lawful Reſpects, an entire Obedience, and very great Affection: as the latter ſeems prophetic of the enſuing Perſecution, and even Martyrdom, of ſome of the earlieſt Champions of Chriſtianity, to whom, I think, they were addreſs'd, and were exhortatory to their Perſeverance, in Defiance of it. But what poſſible Reference have they to Inoculation! If they could have any, an unprejudiced Reader would be apt to infer, there muſt have been ſome direct and poſitive Text againſt it in Scripture; or, as the Novelty of the Diſtemper and the Practice muſt prevent ſuch an Anachroniſm, he might ſuppoſe there was as poſitive a Commandment, not to attempt to ſave, as, not to kill. As to the laſt Text, *viz.*—*Speaking the Truth in* Love, which the Writer may have intended to apply to the Scope and Spirit of his Performance, how reconcileable is this emphatical *Love* with his

——————— *careat ſucceſſibus opto*
Quiſquis ab eventu facta notanda putat.

Which,

Which, in plain Proſe, expreſſes his pious Aſpirations, that whoſoever takes the Character of Actions from their Events, and repeats them from their former Succeſs, may find himſelf diſappointed. Now as nothing but the ſucceſsful Events of Inoculation could recommend the Uſe of it, it fairly extends the Author's good Wiſhes to the Diſappointment, or Death, of any one who ſhall be inoculated, from judging of it by its Event, which is the Caſe of all who are. Can Inoculation poſſibly have its Origin in ſo much Turpitude and Malignity, as this Profeſſor of Love has manifeſted in this *Latin* Fragment? which he prudently declined putting into ſuch plain *Engliſh*, as we have done for him. His Application is general, and, not to include the Inoculated within the Amplitude of his good Wiſhes, he muſt have expreſly excepted them. Beſides that either Turpitude or Malignity is much ſuch an Origin or Cauſe of Inoculation, as *Tenterdon* Steeple was of *Goodwin* Sands: And Perſons who thus bewilder themſelves and others in the Mazes of Sophiſtry and Darkneſs; and are at ſome Pains to avoid the ſerene Expanſe of Reaſon and Sunſhine, may be more juſtly conſidered, as *eluding the Truth out of Prejudice*, than as *ſpeaking it in Love*. Indeed the plain Caſe is, that the former Texts are wreſted, like many others, by the Anti-Inoculators againſt the Practice, to infer it malign, and diſtruſting Providence; when the Subjects of Inoculation manifeſtly reſign themſelves as entirely to the Diſpoſition of Providence, in ſelecting the ſafeſt Way it has ſhewn of ſubmitting to this Diſeaſe, as the others, in waiting for the moſt perilous; which the former ſincerely think, Religion does not require of them, and which their Reaſon diſapproves.

For my own Part, the more I ſee and revolve on this Practice, the Opinion of its providential Origin becomes

comes more deeply rooted in me. Methinks, if the revering and ſagacious *Hippocrates*, who ſuggeſted the Divinity of a Diſeaſe, had ſeen this, and this Method, he muſt have inferred the Divinity of the Remedy too. The Candour of *Sydenham* muſt have acknowleged the Efficacy of his ſalutary attempering *Regimen* amazingly ſurpaſſed. *Boerhaave*, who lived to approve this Method, had contemplated how to reſiſt the Diſeaſe by ſome Antidote, or to diſcharge or extinguiſh it by an anti-inflammatory depreſſing Proceſs. Indeed the common and rational Purpoſe of this great medical Triumvirate was to mitigate and ſubdue Diſeaſes by a judicious Sub-contrariety of Remedies to the Nature of their Cauſes: and thoſe, who have done otherwiſe, have generally done Miſchief. But 'till I heard of Inoculation, I never heard, read, nor could have ſuppoſed, that a direct Application of the contagious Cauſe of a Diſeaſe to the Blood it particularly infects, was the very ſureſt Prevention of its mortal Effects! And thus *Pylarini* tells us, that the *Greek* Woman he found practiſing it had no Sort of Idea why it gave the Small Pox; but attributed both the Practice and Succeſs of it to the Goodneſs of Heaven; the moſt obvious and natural Inference that could occur to a plain uncorrupted Apprehenſion, when ſhe ſaw ſuch a manifeſt Difference between the Conſequences of it, and of common Infection. In ſhort, we ſhall run little Hazard of miſapplying Scripture more for Inoculation, than its Opponents have done againſt it, if we ſay, after reflecting on this effectual, moſt ſalutary, and paradoxical Coalition of the Cauſe and its Cure, *His Ways are not like our Ways*; and then conclude, with the Pſalmiſt, *This is the Lord's Doing, and it is marvellous in our Eyes.*

Nor will our few comparative Miſcarriages in this Way conſiderably militate againſt this Concluſion.

Had no one ever failed under it, few or none, ſcarcely a *Turk* perhaps, had oppoſed it by this Time; and thus becoming a Matter of Certainty, there had been no Room for Faith or Reſignation in admitting it; which indeed might have led ſome to too high a Conception of their Independency in this Reſpect. The Loſſes we ſee by it under the beſt Regulation are no more than ſeem ſufficient to remind us of the ultimate Dependance of the Creature on the Creator in every State; and to convince us of the Shallowneſs of our Inſight, which cannot diſcern the few particular Subjects, whom the gentleſt Mode and ſlighteſt Doſe of this Poiſon, under the beſt human Caution, muſt deſtroy; for a few ſuch very probably there are. But it is a clear Point with me, that no one dying by Inoculation could have naturally ſurvived the common Infection, under ſtrictly the ſame phyſical Circumſtances, among which I include the Treatment of the Diſtemper. Briefly to expreſs my whole Senſe of this Practice, I have a conſcientious Conviction that the Uſe of it is religiouſly right for as many as think rightly about it: nor can I doubt that the Union of true Religion and Reaſon is much cloſer than Enthuſiaſm can perceive, or Infidelity will admit. Medically right I muſt affirm I know it to be, in Conſequence of which I muſt think it politically ſo.

I ſhall be cenſured perhaps, on this Occaſion, as going too far out of my Province; but ſince I may be ſuppoſed to have conſidered this Practice a little in a religious View for my own Satisfaction, I offer the Reflections that have made me very eaſy in the Exerciſe of it, as ſome Remedy againſt the miſtaken Scruples of others. And in this Reſpect, as well as throughout the following Treatiſe, I am happily conſcious, that I have conducted myſelf by as ſingle and abſtracted a View to the Public Good, as I can conceive it in the Power

of

of a weak frail Man to do. The beſt Apology I can make for a good deal of hypothetical Reaſoning I have indulged in is, that I think it very generally points to a rational and ſanative Practice. But however erroneous any of the Theory may prove, our great Felicity is, that the Facts are incontrovertible, and eſtabliſh the Practice on the ſureſt Foundation. Plain Events, as I have ſaid in a former Eſſay, appeal to ordinary unlettered Senſe; they ſpeak an univerſal Language, challenge a direct Aſſent, and confound the moſt elaborate Trifling and Obſtinacy.

To conclude with acknowleging the Aſſiſtances I have had towards this Work, I am ſcarcely at Liberty to name thoſe Phyſicians, who have favoured me with Facts and Caſes. I have named moſt of the Surgeons who have obliged me with any Information; and might, I believe, have had an Account of the Numbers inoculated by many of them, had I not imagined that certain Inferences, however unjuſt, might be made on the Occaſion. Several of my Friends have aſſiſted me with ſome ſcarce Tracts on the Subject, which I could not otherwiſe have readily procured. But I muſt affirm my very peculiar Acknowlegements to Mr. Serjeant RANBY on Account of this Treatiſe, which are the more due, as there was no Intimation of ſuch a Debt. The World had juſtly formed a conſiderable Expectation from thoſe Reflections and Obſervations, which his long Experience and moſt ſucceſsful * Practice of Inoculation had afforded him. Yet hearing I had determined to re-conſider the Subject, he, in the friendlieſt Manner imaginable, gave me all his Papers, and inſiſted on referring the Uſe and Diſpoſal of them to my own Arbitrement. Could I have concealed this more than verbal Compliment to myſelf, without ſuppreſſing his Manner of conferring

* See P. 114.

a Benefit, Decency muſt have diſpoſed me to do it. I had before, on a ſhort Acquaintance, an eſſential and wholly unſolicited Favour, to thank this Gentleman for; and heartily wiſh my Acknowlegements here could expreſs my full Senſe of his great Amity: ſince a generous Reader would much ſooner pardon ſome little Intemperance of Gratitude on ſuch an Occaſion, than the ſlighteſt Languor of it. Finally, if, with ſuch Helps, I have been enabled to produce ſomething of moderate Utility to the Publick, I am greatly obliged to the Goodneſs and public Spirit of my Lord Biſhop of WORCESTER, who firſt did me the Honour of adviſing me to apply my Thoughts to a thorough Conſideration of the Subject.

P. S. Further Intelligence has enabled me to inform the Reader here, that the Numbers inoculated laſt Seaſon at *Blandford* were exactly 309, of whom three died. There was but one Practitioner there, who made an Iſſue in the Arm he did not inoculate, and loſt none, tho' I have not heard the Number of his Patients. Mr. *Wall* informs me, from their Books, that the Numbers inoculated at the inoculating Hoſpital, excluſive of this Fall, were 309, of whom but two died; and adds, that 421 died out of 1415 Patients there in the natural Way. This is indeed an uncommon Proportion, but we are to conſider, how many of them may have been taken in a Manner out of the Streets, and ſome perhaps when the Diſeaſe was advanced. Iam alſo to adviſe the Reader, that I was miſtaken in ſaying, the young Nobleman, mentioned in the Note at P. 71, was inoculated. He was accidentally infected, had the Purples, bled from the Gums, Noſe and Eyes, and died very early in the Diſeaſe; of which I have been aſſured by Serjeant RANBY, who afterwards inoculated his Brother with Succeſs.

OF

OF

VARIOLOUS CONTAGION,

Or the external CAUSE of the

SMALL POX.

IT is much eaſier to deſcribe the viſible Effects of this Contagion, than to inveſtigate, with very probable Certainty, the preciſe Time and Place of its earlieſt Appearance: for though it ſeems a reaſonable Inference, that it was unknown to the antient *Greek* and *Latin* Phyſicians, that will fail to demonſtrate its Non-exiſtence at, or before, their Time, among any People they might have no Knowlege of; and who having very little Commerce, and no Letters, could not greatly extend, nor at all record it. Such a meer Suppoſition, or Poſſibility, is equally incapable of Proof or Refutation, from our very obſcure Knowlege of the Situation of different Nations on their earlier Emigrations, and their gradual Diffuſion over the Earth after the Deluge:

but with Regard to the *Jews*, of whom we have ſome hiſtorical Knowlege, tho' no antient medical Writings from them, we have not much leſs cogent Reaſons for ſuppoſing this Diſeaſe unknown to them under *Moſes*, or even after the Commencement of the Chriſtian *Æra*; ſince many other Diſeaſes incident to them, and particularly their great cuticular one, are reiteratedly named in both the Teſtaments; and the learned Dr. MEAD has met with no Paſſage in either, that induces him to mention it in his Treatiſe *De morbis bibliis*, referring the Diſtemper of *Job*, which many of the Vulgar, eſpecially ſince Mr. MASSEY's Sermon againſt Inoculation, have ſuppoſed the Small Pox, rather to an *Elephantiaſis*. *America*, which was moſt probably peopled from northern *Tartary*, has, with the greateſt Likelihood, been eſteemed wholly free from it, before its Introduction by the *Europeans*. Dr. FRIEND (1) conjectures it to have appeared firſt in *Egypt*, from *Rhazes'* mentioning one *Aaron*, who practiſed Phyſic at *Alexandria* in the Reign of *Mahumed*, A. C. 622, and who deſcribed the Symptoms, Kinds, and Cure of the Small Pox. But we are informed by Dr. MEAD, (2) that REISKE, who was thoroughly ſkilled in *Arabic*, aſſures us, that he found it affirmed in a Manuſcript in that Language at *Leyden*, that the Small Pox and Meaſles firſt appeared in *Arabia*, the Year when *Mahumed* was born, *A. C.* 572,* which

(1) Oper. p. 330. (2) de Variol p. 3.

* Boulonvillars fixes his Birth on April the 9th 571.

which will ſufficiently conſiſt with *Aaron*'s writing on it fifty Years after.

In the Year 1735 a *Latin* Treatiſe was publiſhed at *Wratiſlaw* by the ingenious Dr. HAHN, intitled *Antiquitates Variolarum*, in which he affirms the antient *Greek* Phyſicians certainly knew the Small Pox. This we have not ſeen, but find it anſwered the ſame Year, by another *Latin* Treatiſe, *de Variolis et Anthracibus*, printed at *Hanover*, and written by the learned Dr. WERLHOF, Phyſician to his Majeſty as Elector. This Gentleman maintains the Negative with much Erudition and Solidity. Dr. HAHN replied to it in 1736, and in ſome Citations from *Paulus Aegineta*, *Euſebius* and *Evagrius*, has given us their Teſtimonies of an eruptive Diſeaſe in their Time, which undoubtedly has a great Reſemblance to it in many Circumſtances. The Controverſy was conducted with much Learning, with great Politeneſs, and even Amity, on both Sides, to the reciprocal Honour of the Writers. We do not find that Dr. WERLHOF rejoined on this Occaſion; and yet, after peruſing this Reply of Dr. HAHN's (who ſpares no Pains to ſupport his Aſſertion) and two auxiliary Letters from his Friend Dr. TRILLER, it ſtill ſeems improbable, that the antient *Greek* or *Latin* Phyſicians knew this Diſeaſe, ſince they have left us any Room for litigating their Knowlege of it. If they had really ſeen it, it is not likely it would be leſs contagious, or much leſs mortal, in their Climate than in ours; and if that

were the Caſe, they muſt have been more remiſs, and leſs graphical than we have ſuppoſed them in the Deſcription of Diſtempers, to have omitted ſuch a ſpecific Account of one ſo popular and fatal, and attended with ſo many *Criſes* and *Stadia*, as ſhould ſuffer us to confound it with any other eruptive Diſorder, of which they were obnoxious to a great Variety. It is ſuppoſing them extremely oſcitant and incurious to omit taking Notice of its being manifeſtly contagious, as well as epidemical; not to advert to that extraordinary Circumſtance of no Perſons being liable to a ſecond Attack of it; nor even to mention the indelible Scars and Deformities it muſt have frequently left behind it. Finally we muſt obſerve, that this Reply of Dr. HAHN's, which was dedicated to Dr. MEAD, and ſome *German Literati*, did not induce the former to alter his Opinion of this Diſeaſe being unknown to the Antients, which he has ſtrongly affirmed in his late *Tractatus de Variolis*. P. 2.

But whatever Obſcurity may attend the Inveſtigation of its firſt Appearance, which is not the moſt material Circumſtance, the intimate Nature and *Analyſis* of its external primary Cauſe is likely to remain a Difficulty inſuperable by the human Faculties. And indeed if ſuch *Analyſis* might probably conduct us to the Diſcovery of its ſpecific Remedy or Antidote, which ſome have imagined all Poiſons to have, the Non-attainment of it may be conſidered as one of thoſe partial Evils, to which the Condition of our Nature here irretrievably

trievably ſubjects us. For notwithſtanding the utmoſt Penetration, which many of us may be willing, from an ultimate Fondneſs for ourſelves, to credit our Species with, it is evident, that our leaſt perplexed Reaſonings on ſuch very minute Parts, and exquiſitely active Modifications of Matter, as elude our Inſpection and Cognizance, muſt be taken from their general ſenſible Effects; and from our partial Knowlege of ſuch perceivable Subſtances, as commonly enforce, or reſiſt, their Operation.

It is certain indeed that DIEMERBROECK mentions, (a) and even aſſerts a viſible peſtilent *Nubecula* or Vapour, exſpired from Perſons at the Point of Death in the Plague; and HODGES (b) admits the Adheſion of a peſtilent Vapour to the Curtains, *&c.* But theſe rather prove the Viſibility of the animal Vapour or Moiſture including it, which is alſo the Caſe of the variolous *Pus*, tho' a more groſs and palpable Vehicle: So that it ſeems abundantly inferable on the whole, that neither the peſtilential nor variolous *Miaſmata* can be ſeen, abſtracted from their involving Materials,

 any

(a) Hic eſt ille halitus verus (a multis pro fabula habitus) de quo vulgares loquuntur, cum dicunt, ſe vidiſſe ab aegro, extremum ſpiritum reddente, exiiſſe venenum peſtilens, inſtar parvae nubeculae ceruleae, idque ſe inſinuaſſe in hanc vel illam rem — docet experientia, ex rebus illis, in quas talem nubeculam tranſferri viderunt, poſtea caſu commotis vel excuſſis, peſtem non ſemel aliis adſtantibus communicatam fuiſſe. *De Peſte.* P. 67.

(b) Attamen non is ſum qui inficior auram hanc ſubtiliſſimam ſaepenumero corporibus craſſioribus, pinguibus et denſatae materiae immixtam, et fore olfactu et conſpectu perceptibile. *Loimologia.* P. 42.

any more than they can be weighed, or meaſured, by us.

But it may be affirmed perhaps, that the variolous *Primordia*, or Principles, are the Subjects of Smell, thro' which we are often ſuppoſed to be infected by them; ſince every Perſon is ſenſible of a peculiar *Fætor* or Scent (which it is ſcarcely poſſible to communicate an Idea of in Words) exhaling from the ſuppurated Puſtules, and many have juſtly imagined from the Breath too, of Perſons in this Diſeaſe. It may be controverted however, whether this Senſation be immediately excited by the multiplied Principles of the Diſtemper, blended with the exhaling ſuppurated Humours; or be only the meer Scent reſulting from that Corruption of the Humours they have induced. We are abundantly convinced of the evaporable Nature of the animal Fluids in a ſound State, and of a ſenſible Difference of the Odour of the *Perſpirabile* in ſome Conſtitutions: And there is no Doubt but its Avolation, in a morbid or putrid State, will be attended with a manifeſt Diverſity, to whatever Cauſe ſuch State were owing. Yet as there is a Sameneſs in the Scent of this Diſtemper, in the ſame Degree, in all Conſtitutions (ſome Reſpect being had to the particular Scent of the Perſpiration from particular Bodies) ſuppoſing no Mortification of the Fluids or Solids to ſupervene; it ſeems probable enough, that this peculiar State of the Humours could not be generated by any other Cauſe; nor leſs ſo, that the contagiouſly exhaling Principles of the

Diſeaſe

Diſeaſe concur with the tranſpiring Humours in compounding the variolous Scent; ſince thoſe ingeſted Particles, whoſe Increaſe ſtimulates the whole Machine ſo powerfully afterwards, are not likely to be applied to the ſenſible Membrane of the Noſe, without ſome Degree of Irritation.

By the way it might be ſuggeſted here, that perhaps all the abſtracted Objects of Smell may be of ſuch very minute Extenſion, as to render them incapable of reflecting Light, and conſequently Colour (at leaſt to Creatures without microſcopic Eyes) whence they muſt be neceſſarily inviſible to us; and that their Levity muſt be more conſiderable than that of the *Medium* they float and aſcend thro', on which their Diffuſion and Activity muſt partly depend; tho' it is probable they are exerted from the emitting Body with ſome Spring and Expulſion; and the different Degrees of this from different Subſtances may well concur to diverſify the Strength and Diffuſion at leaſt of different Smells; ſince the various Degrees of Motion, and Modes of Appulſe, will have their Effects as neceſſarily as the Diverſities of Bulk, Weight and Figure.

Let us conſider, before theſe Reflections on Contagion by Smell are rejected as minute and trivial, whether they may not tend to ſome practical Uſe; and enforce the Reaſonableneſs of that Defence from this moſt pernicious Mode of it, which common Senſe ſuggeſts to every one, of carrying ſome odorous Subſtance in their Noſtrils, when they are obliged to viſit infected

Places: ſince the very Room they occupy in the Organ of Smell may obſtruct the Admiſſion of the variolous *Aura* that Way; while the Odours they emit, in a greater or leſs Quantity, and with ſome *Impetus*, may actually repel, diverſify, or obtund, its malign Appulſe in *ipſo limine*. As we are ſatisfied that Muſk is not an Odour prophylactic of the variolous *Miaſmata*, ſince the *Chineſe* add it to the infected Pellets they convey into the Noſe to impart the Small Pox; perhaps ſome of the graveolent Bodies, as *Aſa foetida*, Rue, *Galbanum*, Camphire, or the like, which exert their Scents to a conſiderable Diſtance, might be found available. And as the vapid effæte Air, and the Humours we exſpire with it from the Lungs, are probably ejected with greater Force than our ordinary ſuperficial Perſpiration is, and Contagion is often received by Reſpiration; it were not amiſs perhaps, if the Breath were alſo impregnated with certain prophylactic *Effluvia* on ſuch Occaſions. The faithful and experienced DIEMERBROECK (1) aſſures us, that he found the frequent ſmoaking of Tobacco to be not only a conſiderable Defence in his daily Attendance on Perſons in the Plague of *Nimeguen* 1735, but even expulſive of the Contagion he manifeſtly received more than once: Whence we may infer, *a fortiori*, that this, or ſome other, Fume might act with equal Prevalence againſt a Poiſon ſomewhat leſs pernicious and active than that of the Plague. Yet the

(1) De Peſte. P. 62, 63, 294, & alibi.

the ſame *Author judiciouſly diſapproves the Ingeſtion of Tobacco in Subſtance, or Infuſion, from its violent and debilitating Operation. Now if any particular † Fume, or Odour, were found repeatedly prophylactic of this Infection (ſince very different Smells poſſibly may, like oppoſite Taſtes, ſoon efface or extinguiſh each other) it would naturally lead us to try an Exhibition of the odorous Maſs itſelf, if not deleterious, whenever there was a Certainty, or ſtrong Suſpicion, of an infectious Accident. We have at preſent ſure Remedies for the Bites of ſome venemous Animals, which before were certainly mortal; and Analogy may induce us to hope, that this material, tho' ſubtil and inviſible Poiſon, when inſumed

* It appears from *Diemerbroeck*, if we may calculate from his Hiſtories, that the Plague kills above the ſame Proportion that eſcape through all the different Degrees of the Small Pox taken together: For out of his 120 Hiſtories of the Plague, a few of which regard more Patients than one, 91 died. We may, on this Occaſion, contraſte the Candour and Modeſty of this brave and worthy Phyſician, with that of our modern Quacks and Advertiſers, who are zealous enough to publiſh and exaggerate every Succeſs, or Non-failure, of their *Noſtrums*; as there can be little Diſingenuity in affirming, they are not leſs ſolicitous to conceal their ill Conſequence or Ineffıcacy. It were to be wiſhed therefore, that every Friend to the Public, who has been a Witneſs to any Inſtance of the latter, would as carefully apprize the World of it, that the real Merit and Demerit of their *Noſtrums* may appear from an equitable Calculation.

† An Experiment might be made by the Chineſe Inodoration, whether any of the abovementioned ſtrong-ſcented Subſtances, or any other, being added to the variolated Pellets, would prevent Infection from them. And if this ſhould ſucceed (tho' it ſeems rather to be doubted) an Experiment might be made on a criminal Subject of this Diſeaſe, immediately, or ſoon, after ſimple Inoculation; whether taking and repeating ſuch Subſtances, or ſuch a Medicine as *Boerhave* recommended, would prevent its Operation on the Blood, or expell it without Eruption.

ſumed, is not without its Antidote; nor even its *Aura* without a Counter-vapour. At the worſt a fruitleſs Inveſtigation of ſuch Preſervative would leave us but where we are; and might poſſibly repay the Inveſtigator, as COWLEY ſays of the Alchemiſts ſearching for the Philoſopher's Stone,

With good unſought Experiments by the Way.

The honourable Mr. BOYLE obſerves well, (1) 'that the Steams of Bodies may be almoſt as various as the Bodies themſelves that emit them; and that therefore we ought not to look upon them barely under the general and confus'd Notion of Smoke, or Vapours; but may probably conceive them to have their diſtinct and determinate Natures, oftentimes, tho' not always, ſuitable to that of the Bodies from whence they proceed.' Of Wormwood particularly he obſerves, 'that himſelf and others coming into a Room where ſome Quantity of it lay, found not only their Organs of Smell wrought powerfully upon by the Corpuſcles that ſwarmed in the Air, but that their Mouths were alſo ſenſibly affected with a bitter Taſte.' He infers ſoon after, 'that if our Senſories were ſufficiently ſubtil and tender, they might immediately perceive, in the Size, Shape, Motion, and perhaps Colour too, of ſome now inviſible Effluviums, as diſtinguiſhable Differences, as our naked Eyes in their preſent Conſtitution ſee between the different Sorts of Birds, in their Appearances and their Manner of flying.'

And

(1) Fol. Edit. Vol. 3. P. 328, 329, 331.

And (2) elſewhere he aſcribes, with others, the pretty certain Ceſſation of the Plague at *Cairo*, on the Riſing of the *Nile* about the Middle of *June*, to the Exhalations from the River, and the Falling of a particular Dew at the ſame Seaſon.

As we are treating here of Contagion by Scent, it may not be amiſs to caution ſuch uncertain Subjects of this Diſeaſe, as viſit their variolous Friends or Acquaintance without Apprehenſion of it; ſome, from a Tradition, that they have had it ſlightly in their Infancy, 'till Inſtances of ſome of them receiving the true Diſeaſe have proved the former a different Eruption; and others, from a ſilly Prepoſſeſſion, that they ſhall never take it, as they eſcap'd thro' former infectious Situations, or their Parents are ſaid to have died without having had it; ſuch, I ſay, ſhould be cautious to abſtain at leaſt from viſiting Perſons under the ſevereſt Load and Symptoms of it: Since beſides that the horrid Aſpect of a Friend in that Situation may poſſibly, in ſome Meaſure, infect the very Imagination, the Vapours from that Putrefaction, which often accompanies ſuch a Degree of it, may ſuperadd a different, and not leſs fatal, Infection. The following certain Hiſtory may juſtly enforce this Caution.

A waiting Boy in a Coffee-houſe in *Fleetſtreet* being allow'd a Holy-day in Summer, about 12 or 13 Years paſt, went with his Companions to *Shepherds-Buſh*, where the Body of a Murderer had been gibbetted for ſome Time before. The Day

(2) V. 4. 288. V. 5. 189.

Day was very hot, and the Body extremely offenſive. The Lad came very near it, and was quickly ſtruck with a moſt nauſeous Stench. He returned home, directly ſickened of a Fever with a vehement Head-ach, and died in 7 or 8 Days, complaining to the laſt of the ſame inextinguiſhable Stench. He complained alſo of a Pain in his Knees: and one of his Companions, who was likewiſe infected, but ſurvived, had ſuch an incurable Lameneſs, that he was forced to quit his active Employment in a public Houſe; and was put Apprentice to a Shoe-maker in the Country. But this by the Way.

Repeated Inſtances ſeem to render it probable, that Infection has been propagated by the Sight of Perſons, ſome Weeks recovered from this Diſeaſe, when they had been reiteratedly purged; and where we might reaſonably preſume them diveſted of every infectious Thread. Now notwithſtanding we can ſuppoſe, where any variolous *Effluvia* are ſtill tranſpiring (tho' the leaſt active will tranſpire the lateſt) that they may penetrate the very Eye with the immitted Light, and be tranſmitted from thence by the Optic Nerve to the Brain; and can even imagine that Bodies, abundantly replete with the variolous *Pabulum*, may be more ſtrongly magnetical of ſuch *Effluvia*, and become impregnated with a leſs energic Ray of Infection, than would be neceſſary to excite the Diſeaſe in Conſtitutions, which have a fortunate Scarcity or Dampneſs of it: Yet where we ſuppoſe a total Abſence of ſuch *Effluvia*

via (which particular Circumſtances may very reaſonably induce us to ſuppoſe) and Infection ſpeedily ſucceeds the affecting Appearance of a late variolous Subject, which can preſent but a ſoftened Reſemblance of the Diſeaſe at its Height, this Mode of Infection, with Regard to our ſhallow Caption, may be termed metaphyſical, and is what the merely corpuſcular Philoſopher will deny the Poſſibility of, with an *ex nihilo nihil fit*. But ſuch as can ſubmit to the coercive Evidence of plain Facts, whoſe Cauſes they are ſenſible exceed their Inveſtigation, and have Recourſe to that Analogy which Nature obſerves in various Effects, will diſcover many ſuch obvious Appearances, as ſtrongly countenance the Reality of this Infection, tho' they are not delineative of the Manner of it. The Sight of a Perſon yawning, and even of an emetic Bolus with ſome Stomachs, will frequently impreſs the ſame Motions on the Spectators, as corporal Laſſitude and material Stimulation did on the Yawner or Patient. People of moderate Obſervation muſt have been convinced of very material Effects from Objects, and even their Ideas. I have been ſenſible of a ſhort and ſlight Irritation in my own Eye, from inſpecting, and not long, the inflamed Eye of a Relation. I am not naturally ſubject to ſuch a Diſorder, and this Effect has been repeatedly affirmed by medical Writers. Now if this was not the Conſequence of my Imagination affectingly impreſſed by Sight, there muſt have been a Tranſmiſſion of ſome inviſible irritating Particles

from

from the inflamed to the inſpecting Eye. If Imagination *did* produce ſuch an effectual Commotion in any of theſe Organs, will the affecting Sight of the late Subject of a dreadful Diſtemper be leſs adequate to kindling up the Operation of the variolous *Fomes* in the Blood, which *Fomes* will appear very probably to conſiſt of its moſt active and inflammable Particles? Not that I would conteſt a material Contagion from the Eyes of a very recently recovered variolous Patient, ſince a Perſon, who reflects very attentively on this Subject, may rather be diſpoſed to fancy the very Paſſions attended with energic *Effluvia* exerted from, and admitted thro', the Organ of Viſion; whoſe tranſparent Humours are extremely fine and defecate; and, as they are conſtantly ſupplied, muſt neceſſarily have their *Diſpendium* and Tranſpiration: In which Reſpect they will only correſpond to the reſt of our Surface, which the Sagacity of *Hippocrates* diſcovered to be ἐισπνεον καὶ ἐκπνεον, inhaling and exhaling, in ſpight of his crude and inaccurate Anatomy. The Looks of the Malicious are darted with ſo acute an Obliquity, that they have been ſuppoſed by the antient Vulgar to emit a baneful Influence:

Neſcio quis teneros oculus mihi faſcinat agnos.
VIRG.

Our modern Multitude term it an evil Eye; and to our natural and ſtrong Averſion to ſuch Aſpects perhaps we owe the Fable of the Baſiliſk poiſoning with his Looks: Tho' it is certainly

ly well atteſted, that the Rattle-ſnake of *America*, whoſe Eyes in Purſuit of his Prey are extremely ſparkling and emiſſive, has this mortally faſcinating Power over the Squirrel. It is not unlikely indeed, that the great Terror of the little Quadruped may render it delirious; to which an odd muſk-like Odour, that is ſenſibly diffuſed from this Viper abroad, and perhaps particularly ſo at ſuch a Juncture, may materially contribute. In the Paſſion of Love, different Regards of the Countenance, as it is fortunate or otherwiſe, have been ſaid to act as Cordials, or chill like Diſeaſes: as if certain very different Emanations were emitted from, and admitted thro', theſe Avenues to the Soul; whence Dr. BAILY ſays prettily enough in his *Married Coquet*, 'Did you ever ſee me tangling Eye-beams with any Female?' an Image, that could occur only to a Phyſiologiſt. In brief, when we conſider the very extraordinary Proportion and *Apparatus* of Nerves allotted to the Functions of this Organ; the intimate *Nexus* between its Office and that of the imaginative Faculty of our immortal Eſſence; and farther reflect on the certain Effects of our different Paſſions on theſe animated Habitations of our Souls; tho' it will not demonſtrate the preciſe Mode of their *Hypoſtaſis* or Union, nor the perfect Nature of abſtract Mind, which, like the Eye, perceives all Things but itſelf, any corporal Impreſſions thro' its Mediation will, like many other *Phænomena* we familiarly ſee, and cannot account for, ſurprize us leſs.

After

After all that has been urged againſt the impreſſive Force of the Imagination of pregnant Women, too many viſible Effects, joined to the Sentiments and Atteſtations of many eminent medical Writers, muſt preponderate, methinks, to our admitting it. Perhaps it may appear very doubtful to a curious Reader, whether he ſhall attribute the Infection of a *Fætus*, whoſe (a) Mother had long before paſt thro' the Diſeaſe (but in the latter Months of her Pregnancy attended her Huſband in it, without the leaſt variolous Conſequence to herſelf) to a material, or, if we may be allowed the Expreſſion, to an ideal Infection. As the *Fætus* is not ſuppoſed to reſpire in the Womb; and has moſt probably no Inhalation there of any Thing exterior to the Mother, ſo many Avenues to Contagion are cloſed up. It ſeems difficult to conceive that the Humours of the Mother, which had been already diſcharged of the *Pabulum* neceſſary to the Diſeaſe, were a Vehicle or *Medium* of Contagion to the *Fætus*; eſpecially if we embrace that Opinion, which ſuppoſes no Circulation of red Blood between the Mother and it, but concludes it elaborated by the fœtal Organs out of the Humours abſorbed by the *Placenta*; as we ſee the red Blood of the Chick in *Ovo* manifeſtly elaborated without any further

(a) Memini mulierem quandam, quae ipſa morbum hunc diu ante perpeſſa erat, marito ſuo, eodem laboranti, ſub finem graviditatis aſſidue aſſidentem, foetum recto partus tempore enixam eſſe. Et illa quidem de variolis nihil contraxit; foetus vero mortuus, totoque corpore, mirum viſu! puſtulis foedatus ſe nondum in luminis oras egreſſum lue hac conſumptum fuiſſe manifeſte comprobavit. Mead *de variolis*. P. 66, 67.

further Communication from the Hen, than that of incubating animal Heat. But ſuppoſing the non-infectable *Serum* capable of conveying Infection, it is unknown how long the variolous *Aura* (which may be received by all) is retained in ſuch Conſtitutions as are no longer obnoxious to its morbific Operation. I never remember myſelf uneaſy under reſpiring it, except in the firſt Patient I ſaw, who had a great Quantity, with great Putreſcence, the Stench of which, after a little Qualmiſhneſs, purged me; I can alſo recollect a ſingle Puſtule on my upper Lip after it. Indeed Phyſicians, largely employed in this Diſtemper, muſt be very diſagreeably ſituated, if even ſuch Conſequences were not very unuſual. Yet it muſt be retained ſome Time in the Mother's Fluids, to impart a material Infection; and poſſibly in Conſequence of her Pregnancy with a Subject ſo very ſuſceptible of the Diſeaſe, they might be more retentive of it: While its occurring, however contracted, before the Birth, muſt infer its *Pabulum* congenerate with us, and virtually exiſtent in the *Ovum*, *Semen*, or both: or otherwiſe the Humours, that conſtitute and nouriſh the *Fœtus*, muſt have acquired, in his Syſtem, a Diſpoſition they had loſt in their own. The Infection from an infected Mother is conceivable and common enough, ſince the Stream may well be as impure as the Fountain. And tho' even in the preſent Caſe I do not preſume to exclude a material Infection, becauſe I find it very difficult to diſcover the Admiſſion, or

inveſtigate the * Rout, of it: Yet, that the Circumſtance of the Mother's Imagination being perpetually occupied with the Appearances of this Diſeaſe, in ſo intereſting a Subject, might excite the Operation of a plentiful variolous *Fomes* in her Fruit, without material Contagion, is to me, one of thoſe many difficult Probabilities,

—*Quae nequeo monſtrare et ſentio tantum.* HOR.

The moſt obvious, if not the only, practical Inference from this Speculation is, that it were to be wiſhed all Perſons, reſiding in large and populous Towns, and recently recovered from this Diſeaſe; eſpecially as many as wear the ſevereſt Traces of it, would, where their Condition will admit of it, impoſe a reaſonable Confinement or Receſs on themſelves, for the poſſible Benefit of ſuch as are ſtill liable to it.

But as we are ſuſceptible of Impreſſions alſo, from Diſcourſe and Reflection, it would be ſtill more ſurprizing, if this Infection could be created, as it were, by frequent talking, thinking, or from a conſtant Dread of it; to which laſt Motive

* Air may undoubtedly be involved in the Fluid communicated from the Mother to the Fœtus, and ſuch Air be contaminated with the inſpired Contagion, that was inoperative on the Humours of the firſt Recipient, though it muſt have found a luxuriant *Fomes* in the fœtal Blood. This however muſt give us ſuch a Notion of the exquiſite Minuteneſs and Penetration of the Particles of this Poiſon, as may nearly equal thoſe of the magnetical or electrical *Effluvia:* and it is too natural for us to heſitate at ſuch abſtract Suppoſitions, as our Imagination, that is chiefly affected by ſenſible Objects, is inadequate to the Defiguration of: tho' perhaps the Number and Variety of the evaneſcent Modifications of Matter may equal thoſe which are humanly perceptible.

tive *Lucretius* (a) impiouſly aſcribes the firſt Notions of a Deity. In fact we have never known nor heard, that in Countries, far removed from this Contagion, any Horror of it has ever produced its Effects in the moſt inflammable Conſtitutions, and under the moſt inflammatory Way of living; tho' in a variolous Atmoſphere People have been known to colour on the Diſeaſe being mentioned, and to ſicken very ſoon after: one Inſtance of this I have really ſeen, but muſt obſerve, that the Gentleman, who was preparing for Inoculation, had very imprudently been at the Theatre the Evening before. He got well thro' a large Crop of the diſtinct Small Pox. Mr. BOYLE

 atteſts

(a) *Primus in orbe deos fecit timor.* ———

I ſhould conceive for my own Part, that a truly intellectual Reflexion, abſtracted from every religious Pre-occupation, would ſuggeſt the Wiſdom of GOD, from a full Survey of the Creation, as inſtantaneouſly as his Power: ſince the abſurd Exerciſe of the utmoſt Power muſt impreſs but a very uncouth Idea of Perfection. Now the Attribute of Wiſdom would be apt to excite Admiration and Reſpect: tho' Love or Fear might be indifferently ſuggeſted from the Conception of his Power, according to the different Scene and Situation in which the unexperienced, but unprejudiced, intelligent Creature at once found himſelf; whether in a ſoft and temperate Climate, blooming with every Object to excite and gratify his natural Appetites; or in an extremely fervent or rigid one, ſurrounded with all the terrifying *Phænomena* of Nature, afflicted with painful Senſations, and finding nothing deſirable or lenient. The latter Scene might well indeed inſpire him with that Dread we conceive from the rigorous Exerciſe of a cruel Superiority: tho' ſurely the former muſt equally operate to the Effuſion of Love and Gratitude, when we conſidered his Power as eſſential to our Comfort as his Wiſdom: whence Hope might act as equivalently to the Belief of the Deity as Fear. But as *Lucretius* has had no Regard to this Conſideration, and ſpeaks, on this Occaſion, rather like an Advocate *ex parte*, than a Judge, who is to ſurvey and ballance every Circumſtance, he is certainly too partial here to be philoſophical. But this by the Way.

atteſts his having ſeen a Lady of Condition maſked, on Account of the Small Pox, at a Viſit, whoſe Huſband then preſent inform'd him, ſhe was ſeized with them on hearing a Perſon inadvertently mention the Lady's Siſter having them, which was before carefully concealed from her, there having been no Intercourſe between them during her Siſter's Diſeaſe. (1) But throughout *Britiſh America* they have always been able to trace every Viſitation from it up to its manifeſt * Introduction. And beſides that nothing is more generally certain than the Obſervation of *Horace*, that we are more languidly impreſſed by hearing than ſeeing, we muſt reflect that the morbid Effects of this Poiſon and the Veſtiges of it are as proper Objects of Sight, as a Landſcape, a Face, or any viſible Object, which no verbal Deſcription can infuſe an exact reviviſcible Idea of; tho' even a Pourtrait of them may, while the Life or Original communicates ſuch a vivid and impreſſing one, as we can eaſily recollect. Yet tho' Contagion is not conveyable by meer Rumour, the (a) Dread, that is ſometimes excited by it, has

(1) Vol. 1. P. 513. Where is alſo annexed another extraordinary and well atteſted Inſtance of the Effects of Terror. Dr. *Fuller* has three Inſtances of this Infection from Fear or Fancy, in his *Exanthematologia*. P. 189.

* It muſt be reaſonable to infer from this, that ſuch a Diſpoſition of the Air, as ſeveral medical Writers have thought ſufficient of itſelf to generate the Small Pox, previous to the leaſt perſonal Contagion, has never hitherto occurred in the new World, whatever it may hereafter. The Climate of its Nativity may poſſibly be more obnoxious to a Reproduction of it.

(a) Etiam qui ſunt timidi, et maxime hunc morbum *(variolas)* perhorreſcunt, in eum promptius incidunt; timore enim miaſmatis particulae a ſuperficie corporis intus convehuntur.

Willis de Febribus. P. 118.

has been thought by eminent Phyſicians to render the Subjects of any popular Contagion more readily and fatally impreſſible by it, whenever it ſhall approach their Reſidence. And indeed as great and habitual Fear is attended with an unuſual Waſte or Depreſſion of the nervous Influence, whence a leſs vivid and generous Circulation, and thence a diminiſh'd Perſpiration; it is not improbable that the *vaſa inhalantia*, in ſuch a State, may be more abſorbent of any ambient Contagion, at the very Juncture when the Blood is likely to be more foul and cacochymic; both from the impaired Functions of the Organs, and from an Abatement of its ordinary Secretions and Excretions. Be this as it may, it muſt be ſurprizing to reflect, that the Relation of his Recovery to a variolous Patient (whoſe real Diſeaſe, by Reaſon of his exceſſive Dread of it, was concealed from him throughout his Decumbiture) had ſuch a mortal Effect, that he inſtantly dropped down dead without uttering a ſingle Word; which is ſaid, to the certain Knowlege of many, to have happened to a noble Patient of the late ingenious Dr. HOLLINGS: and this was near to being the Caſe of a Patient of two preſent eminent Phyſicians, who fell directly into a Fit from the ſame Occaſion, but out of which he recovered; both which Facts have been affirmed to me by one of the Gentlemen concerned in the laſt. They have indeed no direct Reference to Contagion, but ſhew how very affectingly the Mind may be ſhocked with the

Idea of it, however excited. The Survivor here can only affirm, whether this were owing to Joy or Surprize; as an Exceſs of either might render the ſentient Principle inattentive to the Accumulation of the Blood in the right Ventricle of the Heart; whence no *Syſtole* enſuing, a fatal Collapſion of the pulmonary Arteries and the Lungs might enſue, and the Circulation inſtantaneouſly ſtop. This mortal Effect others, in (1) a briefer Manner, attribute to the ſudden Exhalation of the vital Spirits, from the inſtantaneouſly exceſſive Perſpiration of the Brain and Heart. In ſuch ſurprizing Events however it were prudent not to omit an artificial Inflation of the Lungs, as we are informed that a (2) Man, ſeemingly dead for above half an Hour, had been recovered by this Means.

It is too obvious however, that all the different Modes or Admiſſions of Contagion furniſh us with no Idea of the Size, Shape, Texture or Denſity of its Particles. We are unwilling to aſſert what will admit of no Proof; but it is not irrational to ſuppoſe, that from the firſt Degree of Exility, where Objects commence inviſible to human Sight (ſince many Inſects muſt ſurely ſee ſuch as evade ours) there are innumerable minuter ones of material Exiſtence, that mock all organical and artificial Inſpection; whence we may conceive Exility as endleſs as Magnitude. We ſhould be apt indeed to ſurmiſe, that Particles ſo extremely light and attenuated would be incapable of any violent Operation on the human Syſ-

(1) Sanctor. De Gorter. (2) Medical Eſſays. Vol. 5. Art. 55.

Syſtem; did we not reflect, that the Degrees of Motion, annexed to different Modifications of Matter, are as innumerable as thoſe of Extenſion; that Velocity may be rendered equivalent to Weight; and that Form too is equally multifarious, complex, and conſiderably operative. We ſhould further contemplate, how porous and yielding many Particles of our animal Fluids may be, and how adapted to attract, and be impreſſed by, the inviſible Seeds of this Contagion: as certain palpable Poiſons are known, like different Menſtruums, to have their appropriate Subjects, ſome acting on the Membranes, ſome on the Blood, and others, not improbably, on the animal Spirits. The fuſing irritating Operation of this inviſible Venom might induce us to ſuppoſe its Particles ſpicular, ſharp, or angular: but as they are generally received without a very remarkable Irritation, and not ſeldom inſenſibly, they may perhaps be ſmooth, and even ſpherical, on their Admiſſion; 'till after having been lodged and macerated a certain Term in their proper Soil, the human Blood, they burſt their aerial *Capſulae* and germinate, emitting their Contents, and attracting the aſſimilable Parts of the Blood; the Sphericity and Smoothneſs of whoſe Globules they probably more or leſs impair. In ſome Habits they multiply themſelves and deſtroy its Coheſion, to ſuch a Degree, that the red *Cruor* paſſes off by the Glands of the Kindneys, Inteſtines, *&c.* and attenuate it ſo far in all (probably by an Increaſe of its inteſtine, as well as circula-

tory, Motion) that the variolated Particles are tranſmitted to the Surface thro' thoſe ſtrait Paſſages, which, as red Globules, they could not paſs in a healthy State; while the *Foveae*, or Pitts, they leave in the Teguments evince their own corroding Quality, or the perverted *Craſis* of their involving Fluids. Hence they gradually tranſpire, and often with a monſtrous Increaſe, moulded perhaps, in ſome of the perſpirable animal Vapour, to the ſame inviſible Form in which the Patient received them.

Many of theſe Effects of this Contagion are abundantly certain and perceivable, tho' whatever is ſuppoſed of its Eſſence and Form is wholly conjectural. And as we perceive its Effects manifeſtly propagated from Man to Man, the Difficulty of accounting for this Diſeaſe in the firſt, who could receive it from no other, the variolous *Adam*, or Prototype, as we may term him, put Dr. LISTER on imagining, that both this and the venereal Diſeaſe were firſt occaſioned by the Bite, or by eating, of ſome venemous Animal; a Suppoſition rather whimſical than judicious. For were we to ſuppoſe (what has never been known) that the eating, or Bite, of a venemous Animal might be attended with ſuch an Alteration of the Blood, as ſhould terminate in Pock-like Eruptions, with the general Symptoms and Stages of the Small Pox, it is not equally ſuppoſable, that the *Effluvia* from Puſtules, ſo excited, ſhould communicate the ſame plenary Effect with the admitted, or injected *Virus* which produced them,

and

and ſo extend the Diſeaſe to an indefinite Succeſſion of Subjects, in whom the primary Cauſe never exiſted. Our Priſon Diſtemper, which muſt be aſcribed to the Force of very foul *Effluvia*, does not appear to be infectious in the * ſecond Inſtance or *Series*; ſince thoſe Spectators, who are infected (and too often fatally) by the Stench of the Priſoners, and are wholeſomly and ſweetly lodged, do not infect their Phyſicians or Attendants; but are very probably infected themſelves by the immediate primary Cauſe of the Diſeaſe, the feculent excrementitious animal *Effluvia*, tranſported from the Jail to the Court in the Cloaths, or from the Perſons of the Priſoners, tho' not actually then under the Diſeaſe themſelves; and to the greater Diffuſion and Malignity of which the Heat, Preſs, and Want of freſh ineffæte Air, in the Court (more crouded than the Priſon) may well contribute. As a potent and contagious Poiſon then is generable from the

* This we conceive will hold good, notwithſtanding a few Hiſtories contained in ſome late Magazine, and aſcribed to the ingenious Dr. PRINGLE. One of them affirms the Infection of a Woman without Newgate, who took it from her Huſband, a Carpenter, frequently employed in the Jail about the Ventilator; and who, beſides the Infection he inſpired, probably brought more home in his Cloaths, whence his Wive's might be equally from the primary Cauſe with his own, and with that of the Gentlemen infected in Court. Beſides which, we conceive that the Lodging of ſome poor People in cloſe little Apartments, and unventilated Allies, and their wretched Way of living from Neceſſity, Uncleanlineſs, or both, may produce Vapours not much leſs feculent and deleterious than thoſe in Newgate: ſince we do not ſuppoſe the Air there rendered ſuch by the Crimes of its Inhabitants, but by their Confluence and Confinement, their Squallidity and Wretchedneſs.

the Accumulation of excrementitious animal Vapours, will it not admit of ſome Doubt, whether Animals, expiring ſuddenly or ſoon in the Air-Pump, die ſolely from the *meer* Excluſion of elaſtic, or otherwiſe, vivifying Air; or whether the Retention of their own Vapours may not a little concur to it, as a poſitive and material Cauſe, with the Privation of Air? I have heard from Gentlemen, who have reſided in *Turkey*, that the Plague has been ſeldom known to rage, as it is probably never bred, but in large and populous Cities; which, with regard to Health, and to the Contingence of Fire too, ſhould never be too cloſe and narrow. For doubtleſs, not only the Temperature of our Climate, but the great Flux and Reflux of the *Thames*; the Draught of Wind that generally accompanies the Courſe of Rivers; and the airy perflable Situation of this vaſt and populous City, greatly conduce to the Salubrity of a Place, ſometimes as replete with animal Steams as many Priſons are. And here we ſubmit it, whether the greater Mortality by the Small Pox, happening frequently in Winter here, may not, in ſome Meaſure, be occaſioned, as well by the greater Throng and Preſs of Reſidents during that Seaſon, as by their conſtituting more Subjects of it.

But to conclude this imperfect Contemplation of a Poiſon, whoſe Eſſence we can no more effectually inveſtigate, than we can weigh Light, or analyſe Darkneſs (whence it may ſeem equally prolix and fruitleſs to many, tho' it ſhould enter-

entertain a few) we ſhall obſerve, that an attentive Conſideration of its general Effects may ſuggeſt ſuch a tolerable Conception of it, as ſhall diſpoſe us to the moſt rational and ſanative Treatment of the Diſeaſe; by directing ſuch *Regimen* and Remedies as oppoſe its extreme Effects, without fruſtrating its *Criſis*; and by inhibiting ſuch, as are generally attended with ſome of its own Operations. Not that we deny but ſome very extraordinary Symptoms, whether from an unuſual Anomaly of the Diſeaſe, or the Idioſyncraſy of a particular Conſtitution, may juſtly warrant, from a directly vital Indication, ſuch Method or Medicines, as are not agreeable to the general Diſpoſition of the Small Pox.

Nevertheleſs tho' we have declined here, and always neceſſarily muſt decline, a material *Analyſis* of this particular volatile Poiſon; yet when we treat of its Effects on the Blood, by a Combination with its inherent *Pabulum* there, we ſhall attempt to delineate the beſt analogical Idea of it, which the Proceſs of the Diſtemper, and our moderate Qualifications ſhall preſent us.

of

SECTION II.

Of the variolous Fuel, or internal inherent Cauſe of the Small Pox.

BUT the variolous *Primordia*, however ſubtil and malignant, would be in-operative, by whatever Inlet admitted, did they not meet with ſome prediſpoſing Quality or Particles in the Conſtitution, that afforded them a ſuitable *Nidus* for their Propagation and Increaſe.

If we attend here to the obvious Evidence of Facts, the Certainty of this Propoſition muſt be abundantly evinced by our obſerving, that on the Inflammation conſequent of Infection, a greater or leſs Quantity of inflamed Humour is viſibly expelled to the Surface; that on its entire Expulſion the inflammatory Symptoms ſubſide, or conſiderably remit; and that on the Evaporation of ſuch infected and infecting Humours, the individual Conſtitution is exempted from a repeated Contamination of this ſpecific Kind. I am ſenſible that ſome, who admit this State of the Facts, may attribute ſuch Exemption to an Alteration effected in the Solids, and particularly in the Integuments, by the Diſeaſe. This was Dr. DRAKE's Conjecture, who ſuppoſed ſuch an Enlargement of the cuticular Ducts and Pores

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from their Diſtenſion by it, that they could never afterwards reſtrain the variolous *Miaſmata* ſufficiently to repeat their Action on the Humours; whence it ſhould ſeem, as if he entertained no diſtinct Notion of a *Pabulum* in the Conſtitution, ſpecifically appropriate to this Diſeaſe; or elſe thought it either renewable there, or not expelled by any *Criſis* of the Diſtemper, tho' no longer effectually impreſſible, from the Accident of a more yielding and patulous Surface.

Had we repeatedly, tho' but rarely, obſerved, that any former Subject of this Diſeaſe, who had paſt the lighteſt Degree of it (however contracted) with the ſmalleſt Eruption, was ſometimes obnoxious to a ſecond Decumbiture from it; while ſuch as had eſcaped through the confluent, coherent, or a large Proportion of the diſtinct Kind, and whoſe Teguments were ſenſibly altered by them, only eſcaped a Re-infection *ad unum*, ſuch Facts muſt have reflected conſiderable Probability on this *Hypotheſis*. But the Contrary to this, the equal Exemption of all who have had the genuine Small Pox, however few or favourable, being eſtabliſhed by the Experience of ſome Centuries, the Fallacy of it is manifeſt from the ſame Evidence, that atteſts the previous Exiſtence and final Extirpation of the variolous *Pabulum*. BOERHAAVE indeed expreſſes himſelf (after affirming his Surprize that neither himſelf nor any other was ever twice attacked with it) as if he imagined the Small Pox left ſome poſitive and material Quality in the Conſtitution, that indem-

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nified it from a ſecond Infection, which ſuggeſted to him the Probability of expelling the Contagion, and extinguiſhing its Effects, by ſome Specific, without Eruption: (a) but, with Submiſſion to the Memory of ſo great a Maſter, it ſeems more obvious, and equally rational, to ſuppoſe, that the inherent Cauſe of this Diſeaſe was expelled with the external, in the ſeparated and diſcharged Humours.

Some few medical Writers have aſſerted a ſecond variolous Infection, that is, a ſickening and internal, not a merely topical, one. BOERHAAVE ſays, * a Perſon having the diſtinct Sort is ſtill liable to the confluent, but not *e contra:* and Dr. WILLIS has (b) mentioned, not ſpecified, even a third Infection. It were to be wiſhed

(a) Hinc mirum eſt quid lateat, quod quis non iterum hoc contagio inficiatur; nam ego habui variolas octavo anno aetatis, & nunquam iterum aliquid de contagio ſenſi, cum tamen tot aegros tractaverim—hinc in his qui illas habuere, aliquid haerere debet, quod facit, ut in illo corpore haerere, nec variolas producere poſſit, & quod ſuperet hoc venenum; ergo puto in rerum natura eſſe aliquid, quod illud venenum expellit ſeu ſuperat, ſed artis eſt invenire. *Prax.* Vol. 5. P. 308.

* Ibid. P. 299.—This, however qualified, conſiderably contradicts the juſt cited Aſſertion, to which indeed it is previous. And here we cannot omit to obſerve, that tho' the Matter of this *Praxis* is often not unworthy of *Boerhaave*, the Manner and Expreſſion very generally are: ſince it is not only barbarous and impure, but ſo very frequently ungrammatical (to ſay nothing of the Multitude of typographical Errors) as to perplex the Senſe. In Fact it is impoſſible it could have been printed from any MS of his; and it has been ſaid to have been thus publiſhed by ſome of his Pupils, to provoke him to a genuine Edition; though the Provocation was ineffectual.

(b) Licet autem venenata hujus morbi ſemina ut plurimum ſemel & unica aegritudine ſolent diffiari; quandoque tamen accidit ut, parte miaſmatis relicta, bis aut ter aegri in hunc affectum inciderint. *De Febribus*, P. 118. *Oper. in 4to Ed.* 1682.

wiſhed this learned Phyſician had informed us, whether this were from his own Knowlege, or from Report, which ſometimes even Writers of Merit have too lightly acquieſced in. And as other eminent medical Writers, of great Experience and Veracity, have affirmed, that they never recur in the ſame Subject; as I never perſonally met with any intelligent Phyſician or Practitioner, who ever ſaw ſuch a Re-infection, tho' he muſt be both the beſt Judge and likelieſt Subject of it himſelf; and never knew it to occur in any one of ſome hundreds I have ſeen in the Diſeaſe, I cannot avoid concluding, that ſuch Reports are very generally founded in Deception. A Majority of thoſe ſuppoſed to have had this Diſtemper twice (having manifeſtly undergone it in Town) had their firſt Eruption in the Country, where doubtleſs it is more likely to be miſtaken: and as all eruptive Fevers have ſome common Symptoms in the previous *Apparatus*, which abate or vaniſh on the *Criſis* of Eruption; as the Swine and Chicken Pox fairly maturate, while the * Cryſtals fill with more dilute Contents; the Inexperience of the Practitioner, and Ignorance of the By-

* By theſe are not meant the cryſtalline Small Pox, but a different eruptive Diſeaſe mentioned under this Name by Dr. FULLER in his *Exanthematologia*, which ſeems to occur but rarely. I ſaw it once however very plainly, and knew it ſolely by his Deſcription, which is exact. There was great Sickneſs, and chiefly, at Stomach, before Eruption, but not the leaſt Complaint or Fever afterwards. The Eruptions were moſtly confined to the Face, pretty numerous, larger than the Small Pox, of much quicker Growth, looked not unlike ſmall Veſications excited by a Burn before they are cut, the Contents being very dilute, and, to the beſt of my Remembrance, not leaving a ſingle Pit.

By-ſtanders, in Places long unviſited by the Small Pox, may ſubject them all to miſtake any of the other for it. And as ſuch other eruptive Fevers are ſcarcely ever mortal, tho' ſometimes attended with conſiderable Anxiety and Sickneſs before Eruption, the Satisfaction of the Patient and his Friends, and the Reputation of the Practitioner will diſpoſe them all to acquieſce and even exult in the ſuppoſed Cure of a perilous Diſeaſe, which they unanimouſly conclude the Patient no longer obnoxious to.

To give the faireſt Scope however to this Aſſertion of a repeated internal Infection, we ſhall not omit, that Mr. SAM. DWIGHT gives an Account, and, as it ſhould ſeem, from his own Knowlege, of a Nurſe who had the confluent Small Pox twice, and died of a third Infection, from attending a Patient in a high Degree of it: and as ſhe ſcarcely ſtirred out of his Room for three Weeks, he aſcribes this moſt extraordinary Diſeaſe to that Circumſtance. Had I perſonally known this Author, or been well informed of his Character, I ſhould be better qualified how to eſtimate his Evidence; which I do not chuſe to reject, becauſe his *Latin* is not very elegant; becauſe his Tracts *de Vomitione*, *de Purgatione*, and *de Variolis & Morbillis* contain little new or memorable, tho' he is vehemently ſolicitous with his Readers not to tranſlate them; nor, finally, becauſe his Name is without any medical Appendage; ſince Circumſtances greatly more important could never undo a Fact: but my Diffidence

ariſes from his not ſpecifying, that he had ſeen the Nurſe himſelf in theſe different Decumbitures from the Small Pox. He ſays indeed, her Face and Body were miſerably ſcarr'd, *miſerrime dilaniata*, by it twice before, a Circumſtance in which it was difficult to be miſtaken: and tho' ſuch an Inſtance having never occurred within my own Knowlege, or any Perſon's of my Acquaintance, renders it not a little indigeſtible to myſelf, I refer the Reader to make his own Judgment of it, from the 59th Page of thoſe Tracts printed here in 1722. The chief Circumſtance, that inclines me to ſuppoſe the Poſſibility of ſuch a Reinfection, is the ſecond Eruption I have more than once ſeen in the Small Pox, about the Term of the ſecondary Fever. Theſe Puſtules appear in the Interſtices of the former, are ſmaller, rather more acuminated, and ſeem to ſuppurate almoſt as ſoon as viſible. Dr. MEAD (1) gives a variolous Caſe, with a third puſtulary Eruption, the Diſeaſe not being completely terminated before the 30th Day. Could any Circumſtance indeed occur in the Proceſs of the Small Pox, that ſhould diſpoſe it to conſume but half, or a third, of the *Pabulum*, which is difficult to conceive (and extremely ſo, where a Patient, like this Nurſe, had the confluent Small Pox, and twice too) there would doubtleſs be no Improbability, that a ſecond Contagion might operate on the Remainder, or, as it formerly did, even on Part of it. Theſe ſecondary and ternary Erup-

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(1) Epiſt. ad Friend.

tions too would make us conclude the ſecondary Fever certainly to depend on variolous Matter ſtill in the Circulation, rather than upon an Interception of the *Perſpirabile* from the cruſted Integuments, which inoculating from ſuch Eruptions might entirely demonſtrate. Very probably however, ſuppoſing Mr. DWIGHT's Account to be Fact, not more than one Conſtitution in one Million is liable to ſuch repeated and diſtant Recrudeſcences of this Diſeaſe. The *Phaenomenon* is at leaſt full as rare in our Microcoſm, which ſome have termed the human Body, as the Appearance of Planets in the Macrocoſm, or Univerſe.

But were we to admit the poſſible Contingence of a ſecond Decumbiture from this Diſeaſe; if we found it too difficult to conceive a partial Conſumption of its *Pabulum* at different Periods, we muſt attribute it to a new Creation, as it were, of that *Pabulum*, which was probably coeval with the Patients very Dawn of Exiſtence, extended afterwards thro' his extending *Stamina*, and which had been ſince expelled from his Habit, by the Operation of its ſpecific and correſponding *Virus*; a Circumſtance that ſtrongly indicates how very rare ſuch a Contingence muſt be. Dr. WILLIS indeed ſuppoſes, in the Paſſage already cited, that the whole * contagious Principles may not be conſumed by a ſingle Diſeaſe, but ſuffice for a ſecond and even a third: but ſurely it appears more

* This he terms *Miaſma* here, which we chuſe to refer rather to the infecting Principle than to the infected Particles, tho' the variolous *Pus* includes both. It may be queried however whether he did not intend the latter.

more rational to apprehend, that ſuch a copious Ingeſtion of them into ſufficient Fuel would kindle at once to a very dangerous or fatal Exploſion. I ſhould as naturally look for this Effect in the commixed and circulating Blood, as for the Deflagration of every Grain of Gunpowder, from the Contact of Fire with any Part of a continuous Train of it, however contorted; tho' by no Means as inſtantaneous a one.

I have been the more particular on this contingent Reſtauration of the *Fomes*, which a repeated variolous Infection ſuppoſes, as the latter has been more vehemently affirmed, ſince the uſe of Inoculation, by its Opponents, who have particularly confined ſuch ſuppoſed Re-infection to the inoculated: while its moſt rational Advocates conclude an efficacious Inoculation juſt equivalently preſervative with the natural Diſeaſe. But of the Probability and Proof of this more profeſſedly in a ſubſequent Section.

Some Phyſicians have judged this internal predispoſing Cauſe of the Diſeaſe more indiſpenſable to its Exiſtence, than the external procatarctic one, the Union of which conſtitutes its immediate Cauſe. Thus WILLIS affirms, (a) that Perſons have been ſeized with it after a Debauch, or very violent Exerciſe, when no other for

(a) Novi quoſdam a crapula, aut exercitio immodico in hunc morbum incidiſſe, cum praeterea nemo circumcirca in tota regione aegrotavit; nimirum ſine prævio miaſmate latentia hujus mali femina, a nimio ſanguinis fervore commota et invicem aſſociata agglomerantur, facileque totam inquinant ſanguinis maſſam, & fermento ſuo inficiunt. *De Febribus* P. 118.

a conſiderable Diſtance round about had been of a long Time infected. This looks at firſt indeed, as if there might be an effectual *Succedaneum* to variolous Contagion (if that could be a *Deſideratum* in Phyſic) while a proper Receptacle, or *Subſtratum*, for it ſeems as indiſpenſable to its Operation and Increaſe, as the Ventricle to that of an Emetic, or the *Ovarium* to Conception: But notwithſtanding we can readily conceive Bodies thus circumſtanced peculiarly ſuſceptible, and as it were attractive of this Contagion, yet there is the leſs Certainty of this ſuppoſed *Succedaneum* to it, as the Diſtemper has never been known to occur in the hotteſt Parts of *America*, under the moſt inflaming Circumſtances, without the manifeſt Importation of it: And with Regard to the *Britiſh* Iſlands, the Accidents by which Contagion is transferred are often untraceable. The learned and ingenious WERLHOF informs us, (1) from his own Knowlege, that a Girl, who had received a Letter from her Brother, then at ſome conſiderable Diſtance, infected with the Small Pox, ſickened ſome Days after at *Hanover*, and infected others, when the Diſeaſe had not been there for ſome Years before. Now as *London* is never without the Seeds of this Contagion, and often greatly abounds with them, gentle Winds may tranſmit the variolated Part of our Atmoſphere to ſome Diſtance; tho' we know at preſent it has never been extended in that Manner acroſs the Atlantic Ocean.

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(1) De variol. & anthrac. Not. 36. ad P. 16, 17.

The variolous *Primordia* and *Pabulum* then being certainly diſtinct Parts of Matter, tho' ſo ſimilar, as to be ſtrongly diſpoſed to coaleſce, to the Increaſe of the former; as often as we are ſaid to have the Seeds of the Small Pox in us, before actual Infection, it can only be true that they are virtually in us, as Grain may be ſuppoſed to exiſt in the unſown Field, to which the human Syſtem, before Infection, correſponds here: while the animal Heat and Humours have a conſiderable Analogy with the elementary Fire and Moiſture, that concur to the Growth and Increaſe of the Grain, when the Seeds are conveyed into the Soil. I need ſcarcely obſerve to the phyſiological Reader here, that when I ſometimes call the variolous Principles *Seeds*, or the variolous *Pus* a *Ferment*, I do not literally ſuppoſe theſe inviſible Atoms either Seeds ſeperately, or an animal Yeaſt compoundedly, nor even that they are not ſuch, as I am truly ignorant of their intimate Eſſence; but that I only uſe theſe Metaphors to illuſtrate their Obſcurity a little, by referring to certain analogous Proceſſes and *Phænomena* in Nature, which ſeem not quite ſo much concealed from us.

But after our continual Aſſumption, with many other Phyſicians, of the two Cauſes concurring to this Diſeaſe, it is but ingenuous to confeſs, that ſome others have mentioned no ſpecific *Fomes* of it, as the learned and elegant FERNELIUS conſiders a particular Diſpoſition of the Air as its ſole Cauſe, and conſents to its ſecond and third Infec-

tion of the ſame Subject. To ſuch conſiderable Authority however it may be ſufficient to oppoſe that of long Experience, and to anſwer, that, if it were ſo in his Time, it is altered ſince, as *Moliere*'s Doctor ſays of the commuted Situation of the *Viſcera* ſince the Time of HIPPOCRATES: neither is it any Injuſtice to the Merit of FERNELIUS to ſuppoſe this Diſeaſe better underſtood ſince SYDENHAM than before. But an ingenious Cotemporary, Dr. HAHN, goes ſtill farther in his *Ratio Variolarum* printed at *Wratiſlaw* 1751; in which, without denying the Exiſtence of this Contagion and *Fomes* in direct Terms, he is intrepid enough to aſſert, in Effect, their being inſignificant and unneceſſary to the Production of the Diſeaſe. His bold Syſtem briefly is, 'That the Small Pox is not ſtrictly a Diſtemper, but as natural, and even as neceſſary, an Evolution of the Body, from the actual Extenſion and Multiplication of the extreme capillary and ſuperficial Arteries, as that of the Extruſion of the Teeth at their different Periods, of the Appearance of a particular Piloſity, of the Eruption of the *Menſtrua* and other Tokens of Puberty, at their ordinary Terms, or of any other corporal Evolution.' Had the learned Author intended this *Hypotheſis* as a medical *luſus ingenii*, he had undoubtedly fulfilled the Purpoſe of an agreable Amuſement to his medical Readers; the Analogy between arboreſcent and animal Vegetation being very curiouſly preſerved; in which the Puſtules are conſidered

ſidered as the Fruit or Berry extruded from the new Shoots, and appended to them by Stalks, or *Pedunculi*, paſſing thro' the Integuments. But as he ſets out with the Air of a ſerious Conviction of its Reality, we are at a Loſs to reconcile it with the Author's Reputation and Knowlege in his Profeſſion; and find it hard to conceive, how he could acquieſce in his own Evaſions of the Objections to his *Hypotheſis*, and particularly to the inſuperable Difficulties it is clogg'd with, from the indiſputable Facts of natural and artificial Infection: where we may obſerve by the Way, that the latter has certainly conduced to give us a more diſtinct Idea of this Diſeaſe, than we had before our Acquaintance with Inoculation.

Taking this peculiar internal Cauſe then for granted, from the moſt obvious Reflection on plain Appearances, and their conſtant Events, we ſhall endeavour to conſider its Quality, and even its Reſidence; Circumſtances not altogether as manifeſt as its Exiſtence. With Regard to its Reſidence, I had not the leaſt Thought of confining it to any Spot or Organ of the Body, till I obſerved, that the elder HOFFMAN was for fixing it, not in the Blood or Humours, but in a virulent Fluid contained in ſome obſtructed Tubes of the ſpinal Marrow, from the Spine and the Head being firſt formed in the *Uterus*. We ſhall not ſuggeſt any Soleciſm here, in this Phyſician's ſuppoſing ſuch a nervous Tubuloſity as Anatomy and Microſcopes are incapable of diſcovering; ſince a

diſſected and inſpected Nerve may be inſufficient to give us an adequate Idea of its vital State, its Action, its Permeability, and ſtill leſs of its Contents; and the nervous Cavities being once admitted, their poſſible Obſtruction will be a Conſequence. But were we to grant this ſpecific Situation of the variolous *Latex*, which Dr. HAHN terms a divine Detection of the true Myſtery of the Small Pox, muſt we not alſo grant, that as many as were formed without this nervous Obſtruction, are neceſſarily void of the *Latex*, which is contained in no other Part, and are conſequently exempt from the Diſeaſe? And how will this ſpecific Situation of a variolous *Latex* quadrate with the Syſtem of variolous Evolution, which the Doctor ſuppoſes the meer Reſult of that neceſſary Extenſion and Increaſe of the capillary Arteries, that ſhould be common to the whole Species, if not to the whole animal Creation, at ſome Term of their Accretion? Beſides, were this Diſcovery of the great HOFFMAN's certain and real, might he not obviouſly deduce it *a poſteriori*, from the violent *Lumbago* ſo frequently previous to the confluent Small Pox, without any ſupernatural Penetration or Aſſiſtance? For my own Part, I find it eaſier to ſubſcribe to their Opinion, who ſuppoſe it eſpecially lodged in the circulating Blood, where it may probably be more concentered or diffuſed, in Proportion to its different Quantity and Energy in different Subjects.

Such as have concluded ſome Impurity, or *Labes*, of the menſtrual Blood to be the internal

Cauſe

Cauſe of the Small Pox, have alſo concluded a peculiar Diſpoſition of the Air, or any inflaming Accident, ſufficient to excite the morbid Explication of it, without any peculiar Contagion. Many Moderns, agreeing, in this Reſpect, with the *Arabian* Writers, have conſidered the Diſeaſe as an Effervescence and Deſpumation of the Blood, neceſſary to its Defæcation, and compared it to the Tranſition of Muſt into Wine. Undoubtedly, as human Blood, it is the Soil or *Subſtratum* of this Malady for once; tho' not from any peculiar Malignity of the menſtrual Blood, which it is abſurd to ſuppoſe the plaſtic Wiſdom of Nature would malignantly employ for the Conſtitution of her nobleſt ſublunary Creature; and which, if ſhe did, ſince the Effect muſt be as extenſive as the Cauſe, muſt inevitably ſubject the whole Species, who are ſimilarly conſtituted from it, to an indiſcriminate and early Attack of the Small Pox without Contagion, a Conſequence manifeſtly contrary to irrefragable Experience. Yet from ſuch a Notion it is not improbable that the *Chineſe* Phyſicians recommend that peculiar *Prophylaxis* from this Diſeaſe, mentioned by DIGBY and by HARRIS, which was no more than ſqueezing the Blood from the Navel-ſtring of the Infant outwards, before the Ligature is made. Theſe Phyſicians are highly commended for their Abilities by ſome of the hiſtorical Miſſionaries, and particularly for their extraordinary, and, to me incredible, Prognoſtics from the Pulſe: but certainly

tainly it argues a groſs Ignorance of that Circulation on which it depends, to ſuppoſe that all the variolable Particles of the Infant's Blood ſhould be confined to the Conduit of the umbilical Chord.

As we ſhall venture then to ſuppoſe this congenial *Fomes* pretty equably diffuſed thro' the Blood, ſo we think it likely that it is not impreſſible by any different Contagion, and very rarely, if ever, excited by the Cauſes or Operation of other Diſtempers: ſince notwithſtanding we cannot be certain, that the more humoral Part of it may not accidentally co-operate in ſome febrile Caſes, it has never been known that any acute or chronical Diſeaſe terminated in this, when the Patient has been certainly ſecure from variolous Contagion. Neither does it appear to be ſingly morbific, as Experience abundantly evinces, that even a mortal Quantity of it has remained very indolently in many remarkably healthy Conſtitutions, for many Years, before its fatal Conjunction with the primary Cauſe. Now, tho' to inveſtigate, with any Preciſion, what *the whole* of this *Fomes* is, be a Difficulty little inferior to the Defiguration of the inviſible Seeds of its correſponding Contagion; yet Experience and Reflexion contribute to ſuggeſt ſome probable Conjectures of thoſe particular Principles in our Compoſition, which are moſt ſuſceptible, and further conſtitutive, of thoſe Seeds. *Boerhaave* ſpecifies the (1) *Salino-oleoſe Temperament* as diſpoſed to the ſevereſt Degrees of the

(1) Aph. 1397.

the Small Pox. Thus very bilious Conſtitutions have been obſerved to be violently affected by it; and Chemiſtry inſtructs us, that Bile has a conſiderable Proportion of volatile Salt and Oil in its Compoſition. We are not a little obliged to the ingenious and indefatigable Dr. LANGRISH, for his *Analyſis* of the human Blood, and Urine in a healthy, and in an * inflammatory State; by which we obſerve, that the volatile Salts and Oil were conſiderably increaſed in the latter, and the Lymph ſomewhat abated; and that in Proportion to the Mitigation of the Symptoms the Urine was more impregnated with thoſe *ſalino-volatile* and ſulphureous Parts. Now if we ſuppoſe (what is not improbable) that the variolous *Pabulum* partly conſiſts of thoſe peculiarly active and inflammable Principles, the Suppoſition will not be a little countenanced by the general Obſervation of Children (whoſe dilute, ſimple, aceſcent Food may be deemed to furniſh but a ſmall Proportion of theſe high Principles) being infected with the lighter Degrees of this Diſeaſe; tho' undoubtedly other Circumſtances may concur to this. It will be further corroborated too from our obſerving that, among Adults, thoſe of a lax Fibre and moiſt Habit, and ſuch as have been rendered pale and low by previous Hæmorrhages and Intermittents, provided theſe have left no Obſtructions of the *Viſcera*, are generally viſited with ſlighter variolous Symptoms, than others who are re-

* Mr. *Boyle* acknowleges the human Blood, which he analyſed, was taken only from healthy Perſons, who bled from Cuſtom.

remarkably vegete and plethoric; of if thin, at the ſame Time, ſallow, dry and rigid: ſince we find from thoſe uſeful *Analyſes*, that the ſound Urine, which may be chiefly ſeparated from the *Serum* (tho' probably charg'd with ſome recrementious Abraſions from the Fibres and fibrous *Cruor*) contained almoſt a third Part leſs volatile Salt than the Blood taken altogether; tho' full four Times as much fixt Salt, which Dr. LANGRISH rationally concludes, from its ſenſible Reſemblance to * Sea Salt, to depend chiefly on that Proportion of it uſually added to our Food.

The ſame Suppoſition will obviouſly account too for the ſeverer Infections, that happen after indulging on high Meats and Sauces, and rich ſtrong Liquors, which may be conſidered as ſupplying an adventitious *Pabulum* to the Diſeaſe; or after conſiderable heating by violent Exerciſe, or long Inſolation, which tend to exalt that already in it, while they produce an extraordinary and unwholeſome *Diſpendium* of the Lymph ſo neceſſary to its Dilution. And here we could have wiſhed, in order to a better Eſtimation of what Proportion of the palpable variolous *Fomes* the *Serum* in ſound and in inflamed Bodies might contain, that the Doctor had further obliged us with its chemical *Analyſis* diſtinct from the *Craſſamentum*, and before it became extravaſated and excrementitious as Urine; which, from a ſenſible Difference

* This was eſtabliſhed beyond Doubt, by Mr. *Boyle*'s diſſolving Leaf Gold immediately in *Aqua fortis* without Heat, on adding ſome Grains of the fixed Salt of human Blood to the Menſtruum. Vol. P. 171.

rence in Smell and Taſte, muſt be loaded with a greater Proportion both of ſulphureous and ſaline Parts than the circulating *Serum*; one Purpoſe of this Excretion very probably being to prevent an inſalutary Accumulation of theſe Principles in the Maſs, and to make room for a further Dilution and Attemperation of it. It ſeems rational however to infer, from the ſmaller Quantity of them even in the excrementitious *Serum*, that in its ordinary State it is pregnant with a leſs Proportion of this *Fomes* than the red Globules, which from their greater Surface and more ſolid, tho' yeilding and fibrous Contexture, ſeem to conſtitute a fitter Soil for the Reception, as well as Nouriſhment, of the Seeds of this Contagion. The more ſimple and aqueous Part of the *Serum* may not improbably attemper and even reſtrain their irritating Effects; but the more it is inclined to a high alcaleſcent, bilious, or ſcorbutic Dyſcraſy, it muſt be the leſs adapted to ſuch a Purpoſe.

But further, as the Solids and Fluids are compoſed of the ſame Principles, it may be aſked, whether the fleſhy and vaſcular, the nervous, and even bony Fibres, contain any Portion of this *Fomes?* And this the rather, as Dr. BUTINI, in his late *Traitè rationelle de la petite Verole, &c.* (1) aſſerts it to reſide in the Solids, from its frequent long Dormancy in the Subject. But if the Suſception of the variolous *Miaſma* appears conſtantly neceſſary to excite and actuate it, the Term of its Dormancy can ſuggeſt but little of its preciſe Re-

(1) Page 9.

Reſidence. However, as the Solids were at firſt in a State of Fluidity, and continue to be nouriſhed and repaired by the Blood, it ſeems reaſonable to infer, that they may contain ſome Share of it. But as the common Principles of both vary in their Proportions, and very manifeſtly in their Modification and Conſiſtence before their Separation by Fire, it ſeems equally reaſonable to ſuppoſe too, that in the lighter and even middling Degrees of the Small Pox, thoſe Particles, now contributing to conſtitute the Solids, which, in their fluid State, were aſſimilable by the contagious Cauſe, are no longer ſo in their more fixed and renitent Form. Yet muſt we admit, that even in a ſound Condition of the human Syſtem, there is an inceſſant and reciprocal Commutation of the ſame Particles into a fluid and ſolid Conſiſtence. Our Aliment muſt be reduced to a conſiderable Degree of Fluidity to become ſuch: it muſt in Part be conſolidated afterwards, to be effectually applied to the conſtant neceſſary Repair of our Machine; and the abraded Particles of our Solids muſt be attenuated to an exquiſite Fluidity, to be expelled thro' the inviſible Outlets of our Surface. In ſome morbid Caſes the Fluids have been found to concrete, the Veſſels to oſſify, and the very Brain has appeared (1) lapideſcent; in others the Fibres colliquate and melt, and the (2) Bones have grown ſoft and flexible. And thus here, from the intimate Relation and Intercourſe

(1) Dr. *Simſon*'s Inquiry, P. 259, &c.
(2) Ephemer. German.

courſe between the nouriſhed and nouriſhing Parts, if the latter abound exceſſively with this Fuel, the Conſequence may not only prove an extreme and fatal Attrition of the red Globules, whence the Purples, or bleeding Pox, with all its dreadful irremediable Symptoms; but even an eroſive Colliquation of the Solids may ſupervene to the Production of Gangrenes: and if a Patient in this horrid Situation could exiſt long enough for it, a *Caries* of the Bones might enſue.

Thus much perhaps may but too prolixly ſuffice to infuſe ſome Idea of the humoral *Fomes* of this Diſeaſe. But beſides this it muſt be confeſſed, there is ſomething much leſs inveſtigable in the human Syſtem, ſome impalpable Eſſence or Quality, the Expulſion or Extinction of which is the eſpecial Cauſe of our Privilege from a ſecond variolous Attack. Common Senſe ſufficiently inculcates, that whatever preſent Alteration this Diſeaſe may effect in the Proportions of thoſe Principles compounding the Blood, the Principles themſelves muſt, in ſome Degree, continue; and in a ſhort Time moſt probably reſume their wonted Proportions; ſince a material Defect of the active Principles would as certainly be morbific as their Exceſs. A Recourſe to the uſual Way of living, the ſame Tone and Action of the Solids, the ſame concoctive Powers, and the ſame Strainers muſt elaborate Blood of the ſame *Craſis* and Temperature. Yet all this Experience demonſtrates inſufficient to regenerate the ſame

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Diſeaſe in the once infected Subject. Is the material *Fomes* then but the principal Vehicle of this connate *Vapour* perhaps, which, like the Contagion that impregnates it, eludes all Inveſtigation? Is the volatile *Fomes* that inſcrutable Eſſence, which ſpecifically diſtinguiſhes the human Blood from that of all Animals, which affords the ſame Principles on chemical *Analyſis*, and yet is not the Subject of this and ſome other Contagions? Has it any conſiderable Analogy with the Air that is fixed and quieſcent for a Time in all our containing Parts, and is it inflamed or rendered elaſtic by the Spark of Contagion? Is it commixed with that volatile Spirit of the *Semen*, which probably pierces and fecundates the *Ovum*; and is it attracted, during the Formation of the *Foetus*, by the moſt active Principles of its Fluids? Or is it only a meer Quality, depending on ſuch a peculiar Mode or Degree of Coheſion in the Maſs, as it never exactly reſumes again, after its having been once unravelled by this Diſeaſe? After the utmoſt Suggeſtions I muſt be content, methinks, to treaſure up its explicite Nature among my numerous *Incognita*; and apprehend a much better Penetration than mine may ſafely preſume with the learned WERLHOF, (1) that it will never be ſatisfactorily explained.

With Regard then to the humoral Part of the *Fomes*, a ſagacious Phyſician may generally form a reaſonable Eſtimation of its Quantity in different Habits and Circumſtances, and frequently leſſen

(1) De variol. P. 20.

leſſen and attemper it by proper Methods. But in Reſpect to the Portion and Energy of this evaneſcent inſcrutable Part of it, the moſt judicious may be miſtaken, as a fatal Infection has ſometimes occurred in Subjects, whoſe Complexion, Age and Temperament ſeemed happily circumſtanced for the Small Pox. It may be affirmed however, that this happens but rarely, as the humoral *Fomes* ſeems as indiſpenſable to the Diſeaſe as the latent one; and it is reaſonable to ſuppoſe they are generally rather proportional.

But whatever this Fuel may conſiſt of in the Aggregate, we are certain it abounds conſiderably more in ſome Conſtitutions than in others: Children at the Breaſt and the Fœtus have died from its Exceſs: ſome few in the utmoſt Vigour of their Life have had a very gentle Diſeaſe from its Paucity and Mildneſs; and WERLHOF informs us, (a) from his own Knowlege, of a *German* Peaſant, who paſt thro' it with great Facility at the Age of eighty.

Could we then, without a violent Conſequence, wholly expell or eradicate this Fuel from the Habit before Contagion, it muſt be juſt equivalent to an effectual Antidote againſt it. But tho' the Divine Omnipotence has not permitted us thus entirely to elude thoſe Shafts that fly by Day and Night, His infinite Compaſſion has indulged Mankind a different Method of having

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(a) Ut nuperrime obſervavi in ruſtico octuagenario, qui tota fere vita ſaniſſimus variolas diſtinctas egregie in iſta aetate exſuperavit. *De variol.* P. 21.

them pervade our Bodies with very little Trouble, comparatively ſpeaking, and ſtill leſs Fatality. And indeed it is no ſmall Happineſs that we can form, upon the whole, a clearer Idea of this *Fomes* which we contain, and can, in ſome Meaſure, diminiſh and attemper, than of the external Principle, whoſe ingeſted Quantity we cannot aſcertain, by natural Infection at leaſt, and whoſe Quality we cannot perhaps alter at all, or not, without preventing its indemnifying Operation. It ſeems further probable, that the *Quantum* and Energy of this inherent Principle moſt eſſentially conſtitutes the Degree and Character of the Diſeaſe: For tho' different Conſtitutions of that Air we continually inſume may be diſpoſed more or leſs to propagate, or to enforce, the Operation of this Contagion, as the State of our Solids and Fluids may be variouſly affected by them; yet Inoculation has abundantly demonſtrated, that an inſenſible Quantity of the very ſame infectious Matter effects a large Aſſimilation in ſome Bodies, while a ten-fold Quantity has not produced the tenth Part in others. Where this *Fomes* then is naturally ſmall and mild, the variolous *Primordia* muſt be aſſiſted by ſome very malignant Adjunct from the reigning Conſtitution, or the Diſeaſe muſt have been treated very abſurdly, to produce a violent and anomalous Small Pox. Where it is very copious and energic, the mildeſt Seaſon and ſimpleſt Contagion can ſcarcely fail to excite a ſevere Degree in the natural Way. We may well then recommend a

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careful and rational Regulation of this Principle to every Inoculator.

Hoc ſaltem minuas, hoc tu compeſce catena.

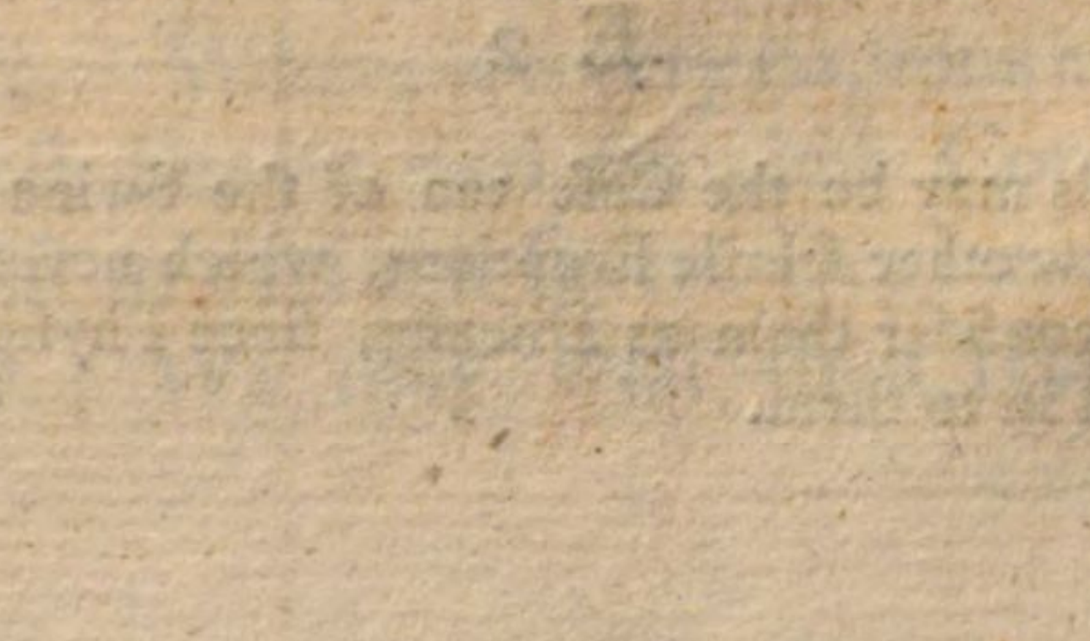
And if Inoculation afforded us but this ſingle Advantage, it muſt certainly be a ſufficient Enforcement of the Practice.

As a Matter of ſome Curioſity, we ſhall cloſe this Section with obſerving, that the Circumſtances of a ſpecifically morbid *Pabulum*, and the Kindling and compleat Extinction of it by a ſpecific Contagion, ſeem almoſt peculiar to this Diſeaſe and the * Meaſles, ſince we have the beſt Aſſurances that Perſons have been a ſecond and third Time attacked with the Plague, and twice even in the ſame Seaſon. We have ſeen an acute Fever however on the Continent of *America* in 1732, which, under a ſimple rational Treatment, deſtroyed about the ſame Proportion with the Small Pox, one in ſix or ſeven, taken all together; and are poſitive that, on a ſecond Viſitation from it in 1739, not one Perſon who had the former was affected with this, and very few others eſcaped it. The Symptoms in both were entirely ſimilar, tho' its different Treatment the laſt Time conſiderably aggravated them, and raiſed the Mortality to that of a ſevere confluent Pock, which ſome have thought to equal that of the Plague.

* Tho' this may be the Caſe too of the Swine and Chicken Pox, and a few other febrile Eruptions, which never return again, we ſcarcely conſider them as Diſeaſes, ſince Phyſicians are very ſeldom called in to them.

If any other acute epidemical Fevers obſerve the ſame Diſtinction, it ſeems to have been little adverted to by medical Writers; and this may be partly referred perhaps to that Diſproportion between the Brevity of Life and the Extent of medical Diſquiſition, which the contemplative HIPPOCRATES (a) hints at, as one Cauſe of the Defect of the Art.

(a) Ὁ βιὸς βραχὺς, ἡ δὲ τέχνη μακρὴ. L. 1. Aph. 1.



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SECTION III.

Of the Progreſs and Operation of the Contagion.

THE Coalition of the variolous *Effluvia* and *Fomes* immediately conſtituting this Diſeaſe, the Title of this Section might naturally incline the Reader to expect a Delineation of its ordinary Symptoms and Progreſſion. But this having been moſt happily effected by the great SYDENHAM; being tranſcribed from him by ſome, with very little Improvement, and by others, not without Depravation, muſt prove the *Crambe centies cocta:* we ſhall therefore rather invite the attentive Reader to a Survey of the Progreſs of this Contagion through the Habit, in the moſt uſual Modes of its accidental and voluntary Admiſſion; and thence ſurmiſe, at leaſt, its earlieſt Impreſſions on the Blood, before they are conſiderable enough to manifeſt the Diſeaſe. Now tho' our Knowlege of the Circulation, and a tolerable Acquaintance with the animal Oeconomy, may furniſh ſome Idea of its Rout and Reception, its manner of Operation can only be conjectured from its ſenſible Effects.

Suppoſe the variolous *Effluvia* then, in the moſt uſual Rout of accidental Infection, conveyed into the Stomach with the *Saliva*; it has not been known, from its immediate Effects, to be a Poiſon *per ſe* affecting the Membranes: it excites no Irritation there, nor was the Imbiber ſenſible of its affecting the Organ of Taſte. The uncertain Quantity imbibed was, however, comparatively ſmall; it had not yet arrived at the Soil for its Propagation, which ſeems to be the Blood itſelf, and not the *Saliva* ſecreted from it. We cannot ſuppoſe the Warmth of the Stomach likely to extinguiſh its Activity. From the periſtaltic Motion, and very gradual *Syſtole*, of this Organ, it will be detruded with ſome of its Contents into the *Duodenum*; where it meets with the Bile and pancreatic Juice; the former of which being peculiarly impregnated with the active and ſtimulating Principles of the Blood, will ſcarcely leſſen its Viroſity. But as yet it has only met with ſuch a Portion of this Fluid, as is inſenſibly effuſed into the alimentary Tube to aſſiſt in Chylification, and for other oeconomical Purpoſes; and now being in its Progreſs blended with the Chyle, it may probably produce ſome Variation in its Texture, according to the Quality of its Contents, which ſuggeſts the Prudence of a due Regard to the Diet of Perſons in the Way of Infection. Being admitted, with the new Chyle containing it, within thoſe exquiſitely minute Orifices of the Lacteals, which are ſaid to elude the Inſpection of the beſt Microſcopes, we will

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ſuppoſe it to receive but little Addition or Exaltation from the Lymph (in its ſimpleſt healthy State) with which the Chyle is diluted before its Arrival at the thoracic Duct; thro' which gradually riſing it is inſtilled with its involving Chyle into the ſubclavian Vein; and from thence by a ſhort Rout conveyed thro' the deſcending *Cava* to the right Auricle and Ventricle of the Heart. And now being in the Way of Diffuſion thro' the Maſs, if it finds a conſiderable Quantity of conſtitutional, or adventitious Fuel for its Increaſe, we may well exclaim,

Heu quantas acies ſtragemque ciebit!

But it may be obſerved, this is not often very haſtily effected, as theſe morbid Seeds, like thoſe of Vegetables, generally take ſome Term to remain in the Soil before they germinate, and attract that Nouriſhment, that is to multiply them more or leſs.

If we ſuppoſe the Infection wholly conveyed with the Air into the *Trachea*, it will be applied to the pulmonary Veſicles, and admitted into the Blood with the blended Air, and thence conveyed to the left Ventricle of the Heart by the pulmonary Vein, a much ſhorter Rout than that by the alimentary and chyliferous Paſſages; whence an earlier Aſſimilation might be expected, ſuppoſing the Poiſon admitted thro' the *Oeſophagus* to receive no additional Activity from the Heat of the Stomach and Inteſtines. As the Moment of inſpiring the Contagion is ſeldom adverted to, we

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cannot ſay, whether it is ſufficiently irritative to excite a Cough by its immediate Contact with the Membrane of the *Trachea*, or the Veſicles, which are leſs defended by a *Mucus* than the Stomach and Inteſtines. Were it capable of producing any ſuch Inflammation on the unwounded internal Surface of the Lungs, as it does on the inciſed *Cutis*, we might too reaſonably apprehend a bad Event from it in ſuch a vital and inquieſcent Organ. But we had already preſumed it was not a Poiſon immediately affecting the Membranes; ſince their frequent Irritations, on the actual Exertion of the Diſeaſe, ſome Days after Infection, are moſt probably owing to the heterogeneous *Craſis* of the variolated Blood, the different Secretions from which will be correſpondently irritative.

Were we to ſuppoſe the Infection received by the Smell ſo entirely, that no Part of it deſcended either into the *Oeſophagus* or *Trachea*; tho' it has a particular Scent, we do not find it irritative enough for a Sternutatory; nor ſo pungent as the inviſible *Effluvia* of volatile Spirits or Salts. The Fibrills of the olfactory Nerves are nevertheleſs evidently affected: yet ſince we can conceive, that the inſorbing Veſſels in *Sneider*'s Membrane may convey the Contagion to the Blood, let us ſuppoſe it ſo for the preſent, to diſtinguiſh humoral from nervous Infection, for which there is probably ſome practical Reaſon. As it will be gradually diffuſed hence thro' the Jugulars and Subclavians to the *Cava* and the Heart, there may perhaps be little particular in the Infection, meerly of the Blood, this Way; except that the firſt

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Impreſſion, being made on this very ſenſible Membrane, may produce a more than uſual Proportion of Puſtules here, which muſt be troubleſome at leaſt in the Courſe of the Diſeaſe, from their affecting Reſpiration, and Deglutition in Conſequence.

As Inoculation may juſtly be ſuppoſed the moſt immediate and ſimple Contamination of the Blood, we obſerve, that in order to it, a very ſlight and ſuperficial Wound or two is made, which is irritative of itſelf, as ſome nervous Fibrills are divided and expoſed. The *Virus* coming into immediate Contact with the Orifices of the divided capillary Veſſels and their Contents, by firſt altering and affecting theſe, muſt make the little Diſcharge irritate the Orifice more, and diſpoſe it to a more ulcerated State, than the unaltered Fluids would in a ſimple Wound. This Circumſtance will naturally be attractive or derivatory of a more than uſual Afflux of Humours to the infected and unreſiſting Part: And accordingly we obſerve a little Heat and Itching about the Inciſions conſiderably before any other Complaint. The Poiſon is, or ſhould be, conveyed into the moſt ſuperficial Capillaries, where the Circulation is the ſloweſt, the Number of circulating Globules comparatively few, their Size probably comminuted from Subdiviſion, and the Degree of Heat but moderate. Its Diffuſion through Veſſels ſo circumſtanced muſt be attended with a very gradual Aſſimilation, and it is not ſeldom found, for ſome Time, ſo merely topical, that a Tingling

ling to the Extremity of the inoculated Member is perceivable, a few Days before any ſuch general Laſſitude, or erratic Fluſhings, as ſignify its Operation on the whole Maſs. This is moſt probably owing to the earlier Alteration of the Fluids in the more immediately communicating ſuperficial Capillaries, twitching their nervous Fibrills; and may prove one Means of inviting a greater Proportion of the future Puſtules to the firſt infected Limb; a Part which, however neceſſary, is not eſſentially vital; but which, on this Occaſion, by continually and equably ſoliciting the morbid Effects from thoſe which are ſo, may often conduce to the Preſervation of Life. And this (a) ſlow and gradual Diffuſion of the *Virus* through the Maſs is likely to render the Habit more pliable to the Diſtemper, by eluding ſuch a tumultuous and precipitate Alteration of the Blood, as muſt greatly endanger the Patient; all ſudden Changes in the Habit, whether from Air or otherwiſe, being ſtigmatized as perilous by HIPPOCRATES long ſince.

This may poſſibly ſuffice to inſtill a Conception of the Commencement, Progreſs, and Circle of Infection; but its ſpecific Action on ſome Parts of the Blood; its Co-operation with others; the Reſiſtance and Dilution it may encounter in peculiar Habits; and every Conflict between the Venom and vital Principles, are neceſſarily latent, both from the inviſible Nature of the Contagion, and our Ignorance of the perfect Texture, Cohe-

ſion

(a) Το ὑπ κατ ὀλιγον ἀσφαλες. L. 2. Aph. 51.

ſion and Activity of the infected Particles. Were the Angel in *Milton*, that purged *Adam*'s viſual Ray, permitted for a while to endue us with a ſupernatural Intuition into the intimate Compoſition and Motion of Subſtances, and then preſented a living and diaphanous Man for the Object of our Sight and Contemplation; when we ſaw the vital Machine in perfect Order compleatly exerting every corporal Function, and ſubtilizing ſome Part of our Fluids, 'till they attained the requiſite Nature to miniſter between Mind and Matter, and became indiſpenſable to the Exertion of Intelligence: And ſubſequently obſerved the gradual and various Alterations of the Blood, from the viſible Operation of theſe infectious Atoms, and the ſubſtantial Reaſon, why the formerly nutritive Particles became depredatory on the Solids, and the nervous Secretion ſo depraved, as to eclipſe the *divinae particulam aurae*, the human Soul: And at laſt diſtinctly ſaw every oeconomical Effort, by which all ſuch morbid Alterations were effaced, and the animal Functions and rational Faculties reſtored to their former Sanity and Conſiſtence; as the accumulated Art of our whole Species would be unequal to the Imitation of ſuch exquiſite Contrivance, the tremendous auguſt Proceſs muſt equally illuſtrate the Glory of the omniſcient, omnipotent ARTIST, with the Firmament and Stars themſelves. But ſince our natural Perceptions are inadequate to ſuch a Scrutiny; and the divine Purpoſe of our brief Duration here renders it unneceſſary; let us try if an Attention to the ſenſible

Con-

Conſequences of the variolous Principles may not at leaſt afford us ſome very analogical Idea of their Operation.

Though the Doctrine of a vinous-like Fermentation in the animal Fluids is, upon the whole, perhaps juſtly exploded, as the frequent arbitrary Suppoſition of it, and the aſcribing a particular fermenting Power to moſt of the viſceral Secretions, appear to ſuggeſt little rational Indication and Practice: yet there certainly is a ſtriking Reſemblance of it in the *Apparatus* and Proceſs of this particular Diſeaſe. The Particles of the Yeaſt conveyed into and agitated through the fermentable, but hitherto unfermented Liquor, attract, or are attracted by, certain Particles of it; from whence an unuſual Degree of inteſtine Motion is generated in it, after a certain Period, which is ſomewhat accelerated by Heat, and retarded by Cold, or other Accidents; from which augmented Motion the Liquor becomes hot, turbid and rareſcent; and after the Expulſion of ſome palpable Parts, and much Air to the Surface, the Motion ſubſides, the remaining Liquor becomes fine, nor is the Yeaſt, thence augmentedly ſeparated, capable of renewing the Fermentation in that ſpecific Liquor, tho' it is, in another unfermented Maſs of the ſame Kind. The Analogy between this and Inoculation, particularly, where the palpable Ferment applied is augmentedly returned; and where the Air expelled with the Yeaſt ſimilarly anſwers to the connate and perhaps aerial *Fomes* (which is very rarely, if ever, regenerable

nerable in the ſame Subject) is too obvious to require any Inforcement. Doubtleſs it was this ſtriking Reſemblance, that prompted SYDENHAM, who was no Idolizer of *Hypotheſes*, to term the Eruption and Suppuration of the Puſtules a Deſpumation of the Blood. And as exceſſive Fermentation leaves the impoveriſhed vegetable Fluid unqualified to nouriſh or exhilarate, ſo exceſſive Aſſimilation too often extinguiſhes the vital, or ſubverts the ſalutary, *Craſis* of the Humours.

Now notwithſtanding the Authority of BELLINI, (a) and other eminent Phyſicians, I am incapable of conceiving, that this Infection of the Blood produces any extraordinary Lentor or Coheſion in it; or that it operates on it, as Acids do on Milk, by coagulating and hardening one Part and attenuating another, which is the ſame Thing as ſeparating its *Craſſamentum* and *Serum*. It ſeems to me, on the contrary, rather to divide the red Globules, and poſſibly to impair their perfect Sphericity and Smoothneſs, whence their Circulation

(a) Ille igitur dolor pulſatorius (ſcil. capitis in variolis) non ab aucto motu aut quantitate ſanguinis proveniet; ſed vel a lentore ſubitam trajectionem prohibente; vel a rarefactione & quaſi fervore, quo ſubita illa trajectio ſimiliter impediatur: vel ab utroque ſimul, ſeu, quod idem eſt, a fermentatione quadam ſanguinis, qua fiat, ut ſolvatur a duriori liquidius, atque ita hoc rareſcat, illud ſubſiſtat magis.—Eſt igitur ſimiliter febris variolarum vitium in qualitate ſanguinis, qua ſolvatur, & fit partim lentior, partim liquidior.—*De Febribus, Prop.* xxx. But it is obſervable, that, in accounting for the Symptoms, he is obliged to recurr much oftner to the Fuſion than the *Lentor*. It is even affecting to obſerve, how oddly Dr. *Willis*'s Hypotheſis of coagulated and congealed Blood in this Diſeaſe correſponds with his Hiſtories of the exceſſive Hæmorrhages in it.

culation through the contractile Veſſels becomes more irritative. Thus Profeſſor SCHACHT calls the (a) Blood in this Stage thin, florid, fuſed, and ſharp. And this to a certain Degree, in ſome cold and ſluggiſh Habits, will be ſo far from aſſuming a morbid Appearance, in its Infancy, that the Perſon will ſeem more than uſually alert and lively, of which I have poſitively ſeen ſome indubitable Inſtances; and have known ſuch a ſlight Cough as might be attributed to a *Lentor* from Cold and a check'd Perſpiration, where the Lungs were juſtly ſuppoſed entire and ſound, go off entirely within 48 Hours after Inoculation; to which it ſhould not be denied, that the general Caution and Regularity of Perſons after it might contribute: but as the Cough vaniſhed, it was inconteſtable, that Inoculation furniſhed nothing towards its Increaſe or Continuance, which an augmented Viſcidity of the Blood very probably muſt. I knew a Gentleman too between 40 and 50 Years of Age, having been a Valetudirian for the two or three laſt, (and had probably had ſome glandular Obſtructions of the *Viſcera*) who declared in Company one Night, that he felt himſelf much better than for a conſiderable Time before, and, as he expreſſed it, entirely well: the next Day he was ſeized with an exquiſite *Lumbago*, which terminated in a violent Degree of the Small Pox, that proved mortal the eighth from Seizure. Dr. MORTON himſelf acknow-

(a) Sanguis tenuis, floridus, diſſolutus, acer.
Inſtit. medic. pract. P. 39.

acknowleges, that this Poiſon is a hot, acrid and colliquative one; tho' his Practice, by the Way, was a pretty odd Method of oppoſing ſuch a Poiſon's Effects. LISTER obſerves, that in the higheſt Species of the Small Pox the Fuſion of the Blood was ſuch, that after it was cold the ſlighteſt Touch of a Feather would move and divide it like Water. BOERHAAVE affirms that in the firſt Stage the Blood is remarkably bright and florid. In ſhort, the liberal, and ſometimes profuſe Hæmorrhages; the irregular Eruptions of the *Catamenia*, that often occur in the *Apparatus* of the Diſeaſe; the intenſly red and purple Eruptions, and the dreadful *Phænomena* of the bleeding Pox, all convince us of its fuſing Quality, as the latter evince the Fatality of its extreme Fuſion. The early Hæmorrhages indeed we find often ſalutary, (a) as the variolated Blood, and poſſibly the very Seeds of the Diſeaſe, may be expelled with it, which furniſhes no bad Hint of the Advantage of bleeding in certain Conſtitutions and Circumſtances, in the *Apparatus* of the Diſeaſe; though we cannot imagine Art ſhall withdraw the infected or infecting Particles as electively, as Nature may ſecern and expell them: yet profuſe Hæmorrhages in the Progreſs of this Malady are very rarely critical, but fatal, Symptoms.

BELLINI has not ſpecified which Part of the Blood, the *Cruor* or *Serum*, he ſuppoſes diſſolved, or

(a) Exanthematologia. P. 305, 306. Saepe narium haemorrhagia hos aegros curavit. *Boerh. Prax.* Vol. V. P. 312.

or inviſcidated, or partly both; nor which of the common Principles of either he thinks chiefly impreſſed or aſſimilable by this Infection. With Regard to the *Cruor*, is it not an evident Contradiction to common Senſe, and an Inſult on phyſical Reaſoning, to imagine, that an increaſed *Lentor* and Coheſion of the red Globules can fit them to paſs thoſe ſtrait cuticular Ducts, which their ſalutary Size and Coheſion does not qualify them to do? And will the Experiment of the human *Serum*'s inſpiſſating over Flame ſufficiently infer, that it may be ſubject to the ſame Condition, while it circulates, from this Infection, and that in the very *Apparatus* of the Diſeaſe? Does not the White of an Egg, which alſo inſpiſſates over actual Heat, and which, like the human *Serum*, is proved to be nutritive, become ſenſibly thinner from a ſtronger Agitation than the humours undergo in their Circle? But it muſt be abſurd to ſuppoſe a further Fuſion of the ſerous or lymphatic Globules neceſſary to their Tranſmiſſion to the Surface; ſince in a healthy State their ſuperfluous or recrementitious Particles continually exſude or evaporate through its Paſſages. And how would an Eruption of them only, if morbidly inviſcidated, agree with the Colour of the Eruptions in the different Degrees of the Small Pox? It follows then, that the red Globules muſt be attenuated by the Effects of this Poiſon for their Tranſmiſſion to the Surface, where they are accompanied with a greater or leſs Proportion of the *Serum*, in whatever Meaſure infect-

infected, which renders the Canals more ſupple and yielding: tho' upon the Degree of this Attenuation I apprehend the Event of the Diſeaſe capitally depends. When the Eruptions appear of the Colour of a Damaſk Roſe, which SYDENHAM juſtly obſerves to be their moſt benign Complexion, may we not reaſonably conceive the Proportion of the infected red Globules to be but ſmall; their natural Size, Figure and Conſiſtence to be but little impaired, from their diluted Reſemblance to arterial Blood; and their Diſtances from each other in their vehicular *Serum* to be conſiderable? ſince we certainly know the Quantity of tinging Corpuſcles to be leſſened in their Proportion, and to have their Diſtances augmented, from the lighter Colour that reſults to any Tincture, on the Addition of a colourleſs untinging Fluid. And may we not as reaſonably apprehend a great Infection and Attenuation of the red Globules, from the precipitate and copious Appearance of deep red, purple, or livid Eruptions; when we perceive that the brighteſt tinging Materials, ſuppoſe Cochineal or Alkanet, impart a Deepneſs that amounts to Opacity, and ſome Degree of Darkneſs, as often as their *Menſtruums* are highly ſaturated with their over-crouded Particles? And does not the Tranſparence and different Shade of Colour, that enſue from a liberal Addition of the untinged *Menſtruum*, hint ſomething of the *Rationale* of ſimple and mild Dilution in this Diſeaſe? which nevertheleſs ſhould not be exceſſive; ſince ſuch an Ingurgitation of the moſt appoſite Fluids

may confuſe the Motion of, and conſequently the Secretion from, the Blood. Nature is ſeldom a bad Director on ſuch Occaſions; for where much is neceſſary, much will be coveted.

And here recollecting my Engagement, in the Cloſe of the firſt Section, to offer, in treating of the Operation of this Contagion, the beſt Idea of it which my Reflection and Imagination afforded me; and finding that Profeſſor SCHACHT at *Utrecht* makes a (a) Query whether it may not be of an alcaline Nature, and affirms there are Arguments which make it likely, but without adducing any of them, I have repeated on this Occaſion a few juvenile Experiments, that do not diſfavour this Suppoſition: tho' I cannot conceive a Neceſſity, with moſt Chemiſts, and many former Phyſicians, of ranking all Subſtances either under the Denomination of Acid or Alkali.

Red Tinctures then, ſuppoſe of the before mentioned Materials, which are rendered of an Orange or lighter Hue, by Spirits of Sulphur, Vitriol, or Nitre, become of an intenſe red, purple, and even blewiſh, by the addition of volatile or lixivious Salts, or the Inſtillations of alcaline Spirits, according to their different Proportions: when the predominating Affuſion of an Acid reſtores them towards their firſt Colour, or lighter, which may be alter'ed again, *vice verſa*,

(a) An non probabile aliquid de alcalina indole habere? Dantur certe argumenta quae hanc opinionem veriſimilem reddunt. *Inſtit. med.* P. 40.

verſa, by different Inſtillations for a few Times, but with leſs Tranſparency and Luſtre, as a preſent Confuſion and enſuing Precipitation are the Conſequence. Now notwithſtanding we do not infer a conſiderable Similarity between the ſpirituous and watry *Menſtruums* here and the human *Serum*; nor between the tinging Particles of Alkanet and Cochineal (tho' the latter is a concreted animal *Cruor*) and the red Globules of the human Blood; yet if any one ſhall from hence ſuggeſt the variolous *Virus* to be an inviſible volatile * alcaline Salt, which proves a conſiderably cauſtic one in the moſt alcaleſcent Habits, it may not be very eaſy perhaps to diſſipate the Suggeſtion. The Experiments indeed would be ſtill more illuſtrative, if ſuch Admixtures excited the ſame Appearances in a Tincture of human Blood, extracted with a Serum-like *Menſtruum*, and kept up, during the Experiment, to the ordinary Height of human Heat. And ſhould this anſwer, tho' we are leſs ſolicitous about the Claſs

* Will this infer the Probability of a particular *Alcalinum vagum* in that Conſtitution of the Air, that has been thought epidemically impreſſive of the Small Pox, without animal Contagion? And may the ſuppoſed *Acidum vagum* in the Air attemper and reſtrain the alcaleſcent Diſpoſition of our Blood, upon that judicious Extenſion of the Τροφοσιωσις of *Hippocrates* by *Heurnius*, L. 2. Aph. 22. which remarks, that Conſtitutions in the Exceſs of any Temperament thrive beſt on the moderate Uſe of Subſtances of the oppoſite one? And as Fire has great Influence in the Generation of Alkalis, rendering vegetable Acids, for Inſtance, Tartar, ſuch; may not this Alcaleſcence of the human Blood be generally higher in the torrid Climates, where the Proportion or Energy of the *Acidum vagum* may be leſs too; and may not theſe be the providential Reaſon of their abounding with the moſt acid and refrigerant Fruits?

than the Nature of this infectious Cauſe, we would purſue Lord BACON's Advice on another Occaſion, where he ſays, 'If any Perſon ſhall diſcover a Metal or Compoſition of the ſame Weight, Colour, Ductility, and all the other Properties of Gold, he may leave others to diſpute about the Appellation of it.' The Change of Colour from ſcarlet to deep red, or purple, on the Addition of a ſtrong Alcali, ſeems to me to reſult from an Alteration in the Form of the tinging Particles, which may alſo imply a Diverſity of their Size; and will not this ſtrongly correſpond both with the greater Number of ſuch intenſely coloured Eruptions, and their extraordinary Stimulation and Pungency, in Compariſon with thoſe of the diluter roſy Efflorescence? which may be preſumed, with the Colour, to preſerve the Form too of arterial Globules, tho' probably ſomewhat comminuted, if the Ducts have not been a little dilated for their Extruſion. There ſeems at leaſt enough in theſe Suppoſitions to make every reflecting Phyſician diffident of the Propriety of thoſe lixivial ſaline Draughts, which have been too often exhibited in the *Apparatus* of the Small Pox, to appeaſe the ſymptomatical Reachings, that uſually terminate, when Eruption fairly appears. At the ſame Time it may be prudent to aver, that we do not intend from the ſuppoſed Alcaleſcence of this *Virus* to recommend the Cure of it by an injudicious Uſe of Acids; ſince ſome Degree of its own Operation is neceſſary to extricate it from the Blood, and to conduct

duct it out of the human Syſtem. And tho' the judicious prophylactic Method of RHAZES was a very cool and acid Regimen; and HOMBERG aſſures us the Fluids of young Animals are more acid than thoſe of Adults of the ſame Species; whence one Reaſon of this Diſtemper proving generally milder in Children may be ſome Approach of its external Cauſe to a more neutral State in their Fluids: yet it may be the Height of Imprudence, 'till its ſpecific Antidote be diſcovered, to attempt an Extinction of that ordinary Proceſs, by which it ſo pervades our Conſtitution, as never to reviſit it: notwithſtanding we have little to oppoſe to its moſt virulent Operation but powerful Acids, Styptics, and the ſtrongeſt potential Cold we can generate and apply.

Thus far of its Action chiefly on the red Globules; but in the very confluent Small Pox, which are conſiderably leſs perilous than the bloody Sort, we find an extraordinary Derivation of Lymph to the ſalivary Glands; which muſt either happen from a variolous Reſolution of the red Globules into ſerous or lymphatic, as it occurs in mercurial Salivations (from whence nearly an entire Renovation of the Maſs) or from a vitious or variolous Lymph: tho' the meer Irritation of the *Fauces* might certainly occaſion a great Derivation of it thro' the ſalival Glands, whatever its Quality be. I am ſenſible that a very few experienced Phyſicians have imagined a great Quantity of this Diſcharge rather pernicious than ſerviceable to the Patient; tho' SYDENHAM and

others conſider it as eſſentially ſalutary to Adults in the confluent Kind. Poſſibly the former ſuppoſe it exhauſts the Patient extremely, and leaves the Maſs too viſcous and undiluted. For my own Part, 'till ſtill further Experience may inſtruct me otherwiſe, tho' I generally ſuſpect thoſe Degrees of the Diſeaſe, that bring on this Diſcharge profuſely, and always deſire to ſee ſuch as are commonly attended with little of it, I confeſs I apprehend, that Adults ſeldom emerge thro' a great Confluence, without a conſiderable Evacuation this Way; eſpecially where the Puſtules have not ſuppurated more benignly and brightly than ſuch generally do. Perhaps it might be as reaſonable to ſuſpect the moiſt Swellings of the Hands and Feet, which, in the happy Termination of ſuch Caſes, almoſt ever ſucceed to the Abatement of the Salivation, and Tumour of the Face. If the *Saliva* is morbid or variolated, the Expulſion is neceſſary; and it may be worth an Experiment, whether a leſs or greater Quantity of it would communicate the Diſeaſe by Inciſions; which perhaps it may as effectually do, as the *Saliva* of a mad Dog injects his *Rabies*. May we infer then, that Bodies very pregnant with the variolous *Fomes* have their *Serum* proportionably furniſhed with it; while in others it may poſſibly ſerve to dilute the former, and attemper the Effects of Contagion? But however this may be, the great Fuſion of the Humours, in the ſeverer Degrees of this Malady, is fully manifeſt from this Evacuation.

TIMONI

TIMONI indeed affirms, that among the other good Effects of Inoculation, it is attended with *no* Fuſion of the Blood; which I conceive is not to be admitted without frequent Limitation: but had he affirmed, it was very generally attended with *much leſs* Fuſion, it would have been ſtrictly right. And indeed I have often ſeen ſuch a ſmall Number of Puſtules by Inoculation, from half a Dozen perhaps to half an hundred, and thoſe fill, or ſometimes half fill, with a thin dilute Humour, the Patient continuing all the Time entirely light and eaſy, that it was obvious there had been very little Fuſion of the red Globules. But ſurely the remarkable erratic Fluſhings, before actual ſickening by Inoculation, will diſpoſe us to infer ſome * Attenuation of the red Blood. And as a very liberal Eruption now and then happens to a few of the inoculated, with a proportionable Inflammation and Maturation, it is offending againſt Experience to affirm *no Fuſion* of the Blood from Inoculation, and is really doing no Service to the Practice, which is diſſerving the Subjects of it; as the moſt effectual Way of promoting it is to relate all, and no more than all, the Truth

* I remember that about ten Years ſince a young Nobleman at Weſtminſter School, who was inoculated, died of a Loſs of Blood in the Apparatus of the Diſeaſe; but whether it was from a ſpontaneous Hæmorrhage, or happened in Conſequence of bleeding him in it, and not being able to ſtop the violent Effuſion in Time, I cannot perfectly recollect, tho' I think it was owing to the latter. I viſited a ſanguine Youth of 14 or 15 inoculated laſt Spring, who, notwithſtanding a preparatory Bleeding, fell into copious and repeated Hæmorrhages previous to and during Eruption, but in other Reſpects paſt very eaſily thro' a pretty moderate Eruption.

concerning it. It muſt be admitted however, that the Practice was in its meer Infancy, with Regard to *Europe*, in TIMONI's Days; and perhaps it needed the utmoſt Eulogies he could give it, to avail us of its many happy Conſequences, which we have ſince experienced.

We have inſiſted the longer on this attenuating, which in a higher Degree may be called the *fuſing* Power of the variolous *Primordia*; as we conceive it has an immediate Tendency to eſtabliſh a more reaſonable Practice, than what has too often prevailed in the *Apparatus* of the Diſeaſe: ſince a conſiderable Error either of Commiſſion or Omiſſion then is too frequently incompenſable by any Thing we can do, or omit, in the Progreſs of it. And too many ſeem to have miſtaken the comparative Magnitude of the variolated Globules, in Reſpect of the Emunctories thro' which they are to paſs, for a general Viſcidity of the Maſs: and hence plying the Patient with very ſtimulating Attenuants within and without, they have precipitately exalted the Poiſon, whoſe Operation was to be mitigated with Judgment.

But tho' I have abundantly convinced myſelf, at leaſt, of the fuſing Influence of this Contagion on the Blood, I conceive, that a very oppoſite Dyſcraſy of it may enſue, from its total Abſorption by the olfactory Nerves, its Admiſſion to, and Confinement in, the Brain. DIEMERBROECK and others have conſidered peſtilential Contagion by Smell as the moſt pernicious Mode of it; and perhaps the Force of that exquiſite Poiſon is ſufficiently

ficiently deleterious, to extinguiſh the vital Spirits, or arreſt their Secretion and Action inſtantaneouſly; as ſome are affirmed to have dropt down dead, without the leaſt previous Complaint or Token of Infection. But as the variolous Contagion is certainly leſs virulent, we may contemplate at leaſt what will probably prove the Conſequence of its total Abſorption by the Smell, and Confinement to the nervous Syſtem. Now though we can form no preciſe Idea of the Manner of its Diffuſion thro' the Nerves, or the unravellable Subſtance of the Brain; yet as their Texture and Senſation are very exquiſite, its Reſidence muſt be incommodious, and will very probably leſſen, or ſome way pervert, the nervous Functions. But the Quantity inſumed was not yet augmented by the humoral *Fomes:* its Viroſity is not likely to be exalted from the comparative Coolneſs of the Part, and Slowneſs of what imperceptible Circulation may be in the cortical and medullary Subſtance. It is equally probable, that whatever the nervous Secretion may conſiſt of, it is too highly attenuated to be a commodious Soil for the Invelopement and Increaſe of theſe contagious Seeds. If their Preſence impairs the Functions of thoſe Nerves, that are ſubſervient to the vital Motions, the Contraction of the Heart will be feebler, the Circulation more languid; the nervous Secretion at its Origin proportionably leſſened, and the Blood be thence diſpoſed to a more ſtagnant and viſcid State. If the inhaled *Virus* prejudice thoſe Nerves, in their

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Subſtance or Contents, which mediate between the Mind and the external Organs of Senſe, and thoſe whoſe Functions are neceſſary even to intellectual Perception, Senſation will become ſo obtuſe, the vital Oeconomy ſo confuſed, and the Faculties ſo oppreſſed, that both animal and rational Life will be ſurpriſingly obſcured, and the Circulation juſt ſufficient to prevent their Extinction, 'till theſe Invaders are expelled by ſome extraordinary Effort of Nature, Art, or both, from ſuch improper Quarters. And beſides that this Eclipſe of the Mind calls for a more ſtimulating *Craſis* of the Blood to excite the organical Functions, the Contagion that would conduce to it, if in the Blood Veſſels, is differently employed. This muſt be more than meer Imagination, as I have repeatedly ſeen Perſons in this very State before Eruption, comatoſe, torpid, cold and relaxed: and I particularly remember a young Subject thus affected, who, being rouſed by a Vomit, a Bliſter, and ſome fetid Cordials, received a moderate Fever, that was ſoon attended with a mild Eruption; on which all the nervous Symptoms vaniſhed, and the Diſeaſe terminated happily.

A worthy Phyſician of St. *Bartholomew*'s Hoſpital has candidly obliged me with three Hiſtories of this Mode of variolous Infection, two by the natural Diſeaſe, and one by the Infuſion. For tho' we have ſuppoſed the latter the moſt immediate and ſimple Application of this *Virus* to the Blood; yet wherever the earlieſt Symptoms are conſiderably more nervous than inflammatory,

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we chuſe to denominate the Infection ſuch. Beſides as ſome nervous Fibrills are divided as well as capillary Blood-veſſels by the Inciſions, we cannot be certain whether the former may imbibe any of the purulent Particles, or their volatile Poiſon, or not; tho' we can be pretty clear from the Symptoms themſelves, where the Determination of the contagious Particles has been, whatever their primary Receptacle was.

The firſt Caſe, in the natural Way, was that of a Girl between ſix and ſeven Years old, who, after a Complaint of her Head and Back, was ſeized with a very violent and long Convulſion: When it was over her Speech greatly faultered, but returned, 'till being ſeized with three ſucceſſive Fits next Day, ſhe loſt the Uſe of her Speech and Limbs entirely. The Eruption notwithſtanding appeared, was very diſtinct, and terminated eaſily, tho' ſhe lay ſpeechleſs and motionleſs all the Time. Full three Months after ſhe began to recover her Speech, but her Limbs more ſlowly, for in July ſubſequent to the January when ſhe was ſeized, ſhe had a great Weakneſs in her Legs with frequent Tremblings. Here the Symptoms were apparently nervous, tho' the Chanel of Infection is uncertain. She is now almoſt entirely recovered.

The ſecond Patient, who was naturally infected at five Years of Age, was judged to have a favourable Eruption, which ſoon turned: but the following Day, after a violent Sickneſs at Stomach, ſhe loſt her Speech in a very few Hours; and, within a few Days, both her Senſes and her

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Strength were reduced to that of an Infant in the Month. This Privation continued, tho' with ſome Increaſe of Appetite, and Health in other Reſpects, for ſix Weeks; at the End of which ſhe began to give ſome obſcure Signs of Underſtanding, and to take that little Notice of Things which Infants do, but made no attempt to ſpeak 'till after 14 Months; and could not ſpeak every thing till the end of 4 more, as ſhe ſeemed to learn more ſlowly in this than in her firſt Infancy. She could not however even then ſtand alone; but after uſing the cold Bath ſix Months, entirely recovered her Limbs, and continues now very healthy, about the Age of 30. In this Caſe the Blood ſeems to have been primarily and moderately infected, and the Nerves to have ſuffered but in Conſequence of a Tranſlation of thoſe morbid *Effluvia*, which ſhould have ſalutarily tranſpired from the Surface. But had the Infection, and conſequently the Tranſlation, been more copious, might not a total Extinction of the nervous Influence, which is Death, have enſued inſtead of this partial one? and which is probably the Caſe of many who expire convulſed about the ſame Period under a ſeverer Eruption. There is alſo, or lately was, an Adult at St. *Bartholomew*'s whom I have ſeen; he had a moderate Eruption in *April* 1752, which filled and turned benignly enough; though he loſt the Uſe of his Speech and Limbs for many Months, and has not wholly recovered them this *Auguſt* 1753: and on this Article of nervous Infection I may refer

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to the Caſe of the Boy, tho' not variolous, § 1. P. 12. who recovered from the Stench of the putrid Body, but loſt the Uſe of his Limbs, and was forced to take to a ſedentary Trade.

The Caſe by Inoculation was that of a Child between three and four Years old, who had been brought low by a Fever a little before. His Convulſions were violent, his Puſtules very few, and when they finiſhed their ordinary Courſe, he had entirely loſt the uſe of his Speech and Limbs, and could not keep his Head erect; which, on his being ſet up, tumbled laterally or forwards. It was three Months before he fully recovered his Speech, and at the End of five his Limbs had not attained their former Strength, nor does he yet walk alone.

May we reaſonably infer here, that the preceding Fever, which had brought the Child low, made him more obnoxious to theſe nervous Symptoms, both by weakening his Nerves, and leſſening the humoral *Fomes* of the Diſeaſe for a Time? as we have already remarked, that the *ſalino-ſulphureous* Parts of the Blood were diſcharged in an extraordinary Proportion by Urine, in the ſalutary *Criſes* of acute Fevers. Neither is it difficult to conceive, that where the Contagion finds but little Employment, and creates little Tumult, in the Blood, it may not the leſs eaſily pervade the moſt ſubtil and untraceable Receſſes of the Circulation, the Brain and Nerves: tho' poſſibly its Reſidence in the Blood for ſome Time before its Arrival there may render it more ſtimulant

mulant and viroſe, than its Conveyance there at firſt thro' the olfactory Nerves; ſince we do not experience the like Irritations to enſue for ſome Days after a manifeſt Infection by Scent. And as ſome weak and tender Subjects fail in this ſort of *Apparatus* before Eruption, tho' very rarely, may we not aſcribe it to the invincible Lodgment of the volatile Poiſon in the Nerves ſubſervient to vital Motion, which, preventing their Functions, muſt occaſion ſudden Death? as their Determination to the Nerves of Speech and Senſation will aboliſh thoſe Functions; and that to the Nerves, inſtrumental to the Exertion of the different Faculties, muſt produce a Loſs or Obſcurity of them; all or ſome of which Effects were probably prevented by the Expulſion of the viroſe Stench of the putrid Carcaſe from ſuch Nerves to the great Iſchiadic one, which terminated in the Boy's incurable Lameneſs. May it not clearly follow from ſuch Fact, that the epileptic Inſults of Children previous to Eruption, which SYDENHAM and Experience inform us are generally ſucceeded by a diſtinct one, are an extraordinary Effort of Nature, by which ſhe explodes, as it were, the heterogeneous Cauſe into the groſſer Circulation for its Expulſion by the Surface? Have theſe convulſive Agitations any co-operating Tendency to excite the ſubſequent Fever neceſſary to this Expulſion? And does this Fever make the Blood more ſtrongly attractive of this *Virus* which convulſed the Nerves, and thus ſerve as ſome *Succedaneum* to

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the Paucity of a humoral *Fomes*, by exalting what there is of it? And as all ſuch horrible Diſtortions of our Frame are accompanied with great ſeeming Agony, has the divine Compaſſion obſcured our Perception at the ſame Time; to the End, that while a very painful Cauſe and unnatural Kind of animal Motion violently acts and ſubſiſts, it ſhould prove tantamount to none, from our concomitant Inſenſibility? By the Way are not the *Tremors* that frequently infeſt Children before, and in the Infancy of Eruption, and which ſeem a Kind of vibratory Motion of the Nerves, a conſiderable Argument that ſuch a State of them is morbid, and that their natural Action is not by Vibration, as ſome have imagined?

Now as all the aforeſaid Subjects of this Mode of Infection had a very mild Eruption, which Children convulſed in the *Apparatus* frequently have, is it not highly probable, that many who have a natural Penury of the variolous *Fomes* may (but more particularly where their Nerves are originally weak, or rendered ſo by any previous Depreſſion) be more liable to the like Symptoms; while ſuch hot active Blood as abounds with it will be proportionably attractive of its inflaming Spark? This may be illuſtrated a little by our ſeeing a Candle whoſe Flame is out, but the Wick not extinguiſhed, quickly catch Flame, and even at ſome Diſtance, from a lighted one. In Fact what Courſe do we ſo ſucceſſfully take in theſe variolouſly nervous Caſes, as that

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of conveying ſuch active Particles into the Habit as we ſuppoſe ſimilar to the *Pabulum*; while we excite ſuch internal and external Stimulation, as the Contagion, when diffuſed thro' the Blood, generally does? Thus we ſee that a few Patients may be ſo peculiarly circumſtanced in this Diſeaſe, that even the Scarcity or *Languor* of its inherent Cauſe, tho' very often to be wiſhed for, may tend to the Production of ſome anomalous Symptoms: as half an Opiate has been known to keep a Patient awake, and to introduce an uneaſy Confuſion, from not procuring the Sleep expected from it. Such a State then muſt rationally ſuggeſt a very different Indication from that of the ordinary and regular Appearances of this Diſeaſe; and Bleeding eſpecially muſt be as prepoſterous here, as its Omiſſion would, in a high ſanguineous Infection and ſtrong Habit. Opiates too muſt act like Poiſons; and this different Indication will coincide with the general Obſervation of HIPPOCRATES, (a) That a Fever ſucceeding Convulſions is oftner ſalutary, than Convulſions ſupervening on a Fever: while it evinces the Prudence of his thinking Imitator SYDENHAM, who directed a Bliſter and Cordials in ſuch Circumſtances, for which he has been taxed by ſome, as inconſiſtent with his own *Regimen*.

Having ſo lately mentioned the great Impropriety of Opiates in ſuch nervous Infections, I cannot omit an Inſtance of a deplorable Weakneſs

(a) Πυρετον ὑπ᾽ ασασμῷ βελτιον γενεσθαι, ἠ ασασμον ὑπ᾽ πυρετῷ. L. 6. Aph. 26.

neſs of the Nerves, ſupervening after the repeated Exhibition of Diacodium, in a Caſe from Inoculation: for the Communication of which, and much more on this Subject, I am obliged to my ſincere and worthy Friend Serjeant RANBY.

The Daughter of a Nobleman being inoculated, at ſeven Years of Age, ſickened very favourably the ſeventh Day, and had not more than 40 Puſtules in her Face. But after complete Eruption the Puſtules, which were very large, growing ſore, rendered her very uneaſy: on which Account the Phyſician who attended ordered a Draught to be taken at Night with a proper Quantity of Diacodium; which was nightly repeated 'till the turn of the Diſtemper; at which Time, tho' the Child ſeemed to retain her Senſes perfectly, ſhe totally loſt her Speech and the Uſe of her Arms and Legs, which perſiſted, with very little Amendment for three Years; her weak and feeble State continuing ſtill longer, tho' ſhe at laſt recovered and is now very healthy. This tedious Misfortune nevertheleſs did not prevent her noble Father, who was a very intelligent Man, from inoculating his only Son afterwards, but enjoining a Reſtriction from all Opiates. His Commands were obeyed, and his Son went thro' the Diſeaſe very eaſily and happily.——It is certain indeed that a few peculiar Habits are diſpoſed to receive only the literally enervating Operation of this wonderful Drug. And every prudent Phyſician, the firſt Time he directs an Opiate for a Patient, muſt think it right

to enquire, if he has ever taken any, and how they affect him. It happens fortunately enough tho' for the Subjects of a Diſeaſe, in which Opiates are certainly often ſerviceable, that ſuch Idioſyncraſies are rare. Camphire has been ſaid to ſucceed as an Anodyne where Opium diſagrees, which I had never any Occaſion to Experience: and *Aſa fœtida* has been ſuppoſed by ſome to obviate its depreſſing Conſequences. We are certain there can be no Imprudence in avoiding to direct it as of Courſe, and for Form; but to let it be fairly indicated firſt, particularly in weak, ſuſpected Habits.

Upon the whole of nervous Infection, it ſeems clearly inferable, that a Tranſlation of the variolous Contagion from the Nerves into the Blood is more rarely fatal, than the Tranſlation of the augmented and heated Contagion upon the Nerves: for tho' we have admitted a few tender Subjects to ſuccumb under nervous Infection, for want of its Tranſlation into its proper Receptacle, the Blood; without which, as its Vehicle too, Eruption, the firſt *Criſis* of this Diſeaſe, cannot enſue; yet a much greater Proportion die from an immediate Infection of the Blood itſelf. Of ſuch it muſt be confeſſed many periſh from the conſequent Putridity, Colliquation, or meer Exhauſtion of the Fluids; or an Inflammation and Gangrene of the Solids, while the nervous Functions ſeem not proportionably impaired. But we know experimentally, that ſtill more are affected, towards the fatal *Cataſtrophe* of the confluent Diſ-

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eaſe, with ſuch furious *Deliria*, high Orgaſms, and ſtrong Convulſions, as demonſtrate the Nerves to be violently injured thro' the *Medium* of the infected Blood: And theſe may well be conſidered as their acute Symptoms, in Compariſon of thoſe before adduced; which not going off with Eruption, nor yet extinguiſhing the Life of their Subject, terminate in a greater or leſs Imperfection of ſome of the animal Functions, for a longer or ſhorter Term.

It only remains to enquire here into the moſt uſual Period after Infection, when its ſenſible Operation commences, which it ſeems difficult to aſcertain preciſely with Reſpect to natural Infection. For where the Diſtemper is very rife and even epidemical, it is ſeldom the Subject, who is generally ſuppoſed to avoid Contagion, can ſtrictly fix the Time of inſpiring it, or the accidental Contact of any infected Material: beſides which, the Seaſon of the Year; the general Character of the Diſeaſe during that Conſtitution of the Air; the particular Habit of the Subject, and his Way of living after an unconſcious Infection, will probably occaſion ſome Diverſity in this Period. Some have been ſaid to ſicken a Month or even two, after they have exchanged the Scene of Infection for another apparently free from it: and this has been ſtrongly affirmed of a more virulent Contagion; tho' ſuch Caſes are undoubtedly rare. Others have ſickened as it were immediately from the Sight of a Perſon newly out of the Diſeaſe: but this is ge-

nerally accompanied with great Dread, and the Infection is often fatal. I remember one Inſtance of a Gentleman's complaining the ſeventh Day after a Scent, which was certainly variolous, and who, after a very liberal Hæmorrhage from the Noſe the following Day, paſt thro' a kindly Diſtemper. This by the Way muſt aſſure us, that the Blood may be primarily infected even thro' the Smell, as we had no Convulſion, remarkable Head-ach, Delirium, *Torpor*, or nervous Symptom; except the *Lumbago* be one, which was diſſipated by the Loſs of Blood, the Stream of it being very free, and the Complexion bright and florid. As this acute Diſeaſe however has its different *Criſes* and *Stadia*, perhaps the moſt regularly of any, let us ſuppoſe that the Seeds of it, even fortuitouſly received, have, in general, a certain Period of remaining in the Blood, before they effect its ſenſibly morbid Alteration. Now as the Inoculated rarely complain, or but very ſlightly, before the ſeventh Day after, and often not untill the eighth; and the moſt benign Pock is generally arrived at Maturation the ſeventh from its Appearance, we may grant them to lie about a Week in the Habit, before they are ſufficiently increaſed to manifeſt the Symptoms. But here it is plain the Inoculated, who can aſcertain the very Minute of Infection, have a material Advantage of thoſe unconſcious of it: ſince, beſides their Preparation for the Diſeaſe, they have, as it were, ſuper-added a new *Stadium* of a full Week previous to the *Apparatus* of it; in

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which, while they endeavour to leſſen and mollify its natural *Fomes*, they are certain to commit no Irregularity that may exaſperate the Infection; which the others, eſpecially if Male-Adults, are ſo liable to do. But having admitted this ſeeming Inactivity of Infection for a Week, it ſhould be ſubjoined, for Reaſons already ſpecified, that there are many Exceptions to it in the natural Way, which, tho' more rarely, may take Place in the inoculated too. Thus PYLARINI informs us, the Symptoms do not appear in all the inoculated at the ſame Period; the Ferment acting ſooner or later, according to the various Temperament, Age and Strength of the ſeveral Patients; and he ſays, there have been Inſtances, tho' rarely, where Eruption has appeared the firſt. TIMONI alſo ſays, the Small Pox begin to appear ſooner in ſome than in others. Dr. LE DUC, who was inoculated at *Conſtantinople*, ſickened the fourth Day, had a conſiderable Eruption of the diſtinct Kind, and yet aſcribes the Diſeaſe to Art. So that upon the whole our early Inoculators ſeem to have hurried on too precipitately to this Concluſion, that as many of their Patients as ſickened before the ſeventh Day, which ſome of the few who miſcarried did, had previouſly received the natural Infection, to which they were very zealous of aſcribing the Miſcarriage. And tho' it is certain that moſt of them had been too much expoſed to the Hazard of it, and ſome, with the greateſt Probability, had taken it; nevertheleſs ſince this variolous Aſſimilation is a morbid Heteroge-

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neity of the Blood, wherever the Matter for it is very copious, it is reaſonable to infer, that the Progreſs of it may be proportionably ſpeedy, and ſometimes even precipitate Nature to attempt that Separation of the aſſimilated Humours, which is neceſſary to purify the Maſs for vital Purpoſes. We are not to wonder however, that all the Obſervations from TIMONI and PYLARINI were not at firſt ſo ſtrictly attended to, where the general Event of the Practice was very proſperous. Mr. MAITLAND, our earlieſt Inoculator, was a very moderate phyſical Reaſoner himſelf; ſome Pamphlets that appeared afterwards under his Name, in a medical Juſtification of the Practice againſt Dr. WAGSTAFFE *&c.* being aſcribed to the ingenious Dr. ARBUTHNOT. Undoubtedly, among its many early Promoters, ſome acted from Candour and Philanthropy, and others too probably from a ſordid Attachment to themſelves alone; which muſt diſpoſe them to qualify and elude, to their utmoſt, any Event, that might contract a valuable Article of Trade. But no longer to indulge any unavailing Reflections, a great Majority of Inſtances obliges us to admit the ſeventh or eighth Day, as the moſt general Term of the artificial Invaſion, and the ninth or tenth of Eruption, in this Climate: where it occurs earlier, we may reaſonably apprehend a greater Diſeaſe; where it is retarded a Day or two, we ſhould be apt to expect a milder, from a ſlow and gentle Aſſimilation. I knew a young Lady, whoſe Eruption did not appear till the fourteenth

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from Inoculation; it was very little, and the Diſtemper next to none. On the other Hand I am authentically informed of three recent Inſtances, in two of which Eruption did not happen before the ſeventeenth Day, and was very conſiderable, tho' both did well. A Boy of ſeven Years old at *Egham* ſickened the twenty-third from Inoculation, had a ſevere Eruption and Diſeaſe, but eſcaped. His Brother, inoculated with him and from the ſame Matter, ſickened at the ordinary Term, and paſt the Diſeaſe very eaſily. The two former were not Brothers, nor nearly related I think. In Miſs DEGRAVE's extraordinary Caſe Eruption, which proved moderate, did not happen till eleven Weeks after Inoculation, upon heating herſelf at the Play-houſe, which produced an undetermined Altercation, whether ſhe ſickened from Accident or Art: but as ſhe complained during that whole Interval of indifferent Reſt and Appetite, and was ſubject to erratic Fluſhings; and as DIEMERBROECK gives us (1) an Inſtance, from his own Knowlege, of the Contagion of the Plague lurking in the Body (tho' with a few ſuch Symptoms, but without a Fever) for three Months before it plainly manifeſted itſelf, we may very well conclude the *Languor* or Dormancy of the variolous *Aura*, in a Habit but little diſpoſed to the Diſeaſe, for eleven Weeks. There are undoubtedly ſome particular bodily Diſpoſitions with Regard to different Infections; and ſuch a Variety of

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(1) De Peſte. L. 4. Hiſt. 103.

external Accidents may concur to retard, accelerate, or otherwiſe diverſify their Operation; that tho' we can generally predict the Term of their Energy from the time of their Reception, it is not ſtrange, that ſuch an extraordinary Inſtance ſhould ſometimes occur, as an Exception to the general Rule, and elude the ſtricteſt Inveſtigation of our halting and imperfect Knowlege.

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SECTION IV.

Of the Riſe and Date of Inoculation, and its Introduction into Europe.

THE preceding Enquiries into this Contagion and its Nouriſhment, and into ſome of the early and general Effects of their Coalition, may conduce perhaps towards forming a radical Notion of the Diſeaſe; without which there can be little Proſpect of its proper Treatment. And our daily Experience and weekly Accounts ſufficiently atteſt the very conſiderable Fatality of this Coalition in the natural Way: ſo conſiderable indeed, that the Small Pox have been generally eſteemed more pernicious to the *Engliſh*, than to moſt other Nations of *Europe*. This was no bad Reaſon then for our being the firſt *Europeans*, who have largely availed themſelves of the indiſputable Advantages of combining the external and inherent Cauſe by Art; to which alſo the juſt and entire Poſſeſſion of our religious and civil Rights, of our human and Chriſtian Liberty, and the Genius of a People, who are ſtrongly addicted to think for themſelves, have greatly contributed.

But

But the firſt Diſcoverer of this Method, as well as the preciſe Time and Place of its Diſcovery, are not only unknown to the *Europeans*, but, as far as we can learn, to the *Aſiatics* themſelves, from whom we received it. Hence it is not improbable it might be made by * Accident, without the leaſt medical Deſign or Deduction, and by ſome poor unlearned, but Heaven-taught, Mortal, who, from the rude and illiterate State of his Country, has never been recorded. Were this Conjecture as true as probable, the Fact might very properly repreſs the Pride of human Erudition, and the Futility of many laboured Reſearches; while it muſt naturally remind us of that Paſſage in the *New Teſtament*, where our Saviour glorifies his Father, for concealing ſome things from the Wiſe and Learned of the Earth, and revealing them to Sucklings. For had it occurred

* M. Geoffroy obſerves, that moſt Specifics too have been thus diſcovered, and gives us the following Account of the Diſcovery of the Bark, in his Hiſtory of medicinal Subſtances, tranſlated by Dr. *Douglas*, ‘ Some Trees which bear it being blown into a Canal, or Pool of Water, lay there 'till the Water acquired ſo bitter a Taſte, that no Perſon could drink it: one of the neighbouring Inhabitants, however, being ſeized with a violent hot Fit of an Ague, and finding nothing elſe to quench his Thirſt, ventured upon a large Draught of this bitter Water, which cured him of his Fever and Thirſt at the ſame Time. This being made known by him for the Benefit of his Neighbours, the ſame Water was uſed by many, with equal Succeſs: but the Trees coming at length to rot, the Water loſt its bitter Taſte and Virtue likewiſe; but upon a diligent Search after the Cauſe of this Bitterneſs, they at length traced it up to the Bark of theſe Trees, which has ever ſince been made uſe of, as the moſt certain Remedy for intermitting Fevers of all Kinds.'—We do not find though, that the preſent Practice warrants the Exhibition of it in any Part of the Paroxyſm, hot or cold.

curred to any Perſon of Rank or Education, or to one of medical Abilities, the Love of Fame or Profit muſt certainly have informed us of the Name of a Diſcoverer, who merits more from his Species, than many, who have had Statues, and even Altars, erected to them.

I am aware that Dr. MEAD may be underſtood to ſuppoſe this Diſcovery the Reſult of (1) Study and Conſideration in one Paſſage, where he ſays, 'As Experience had demonſtrated, that no Perſon was ever twice afflicted with the Small Pox; and that ſcarce one of a thouſand eſcaped it entirely, it was thought expedient to conſider how the Diſeaſe might be communicated:' tho' he qualifies this Notion ſoon after, by adding 'it was Matter of Wonder to him, how a People ſo ignorant of Phyſic, as the *Circaſſians*, could make the Diſcovery.' Mr. MAITLAND, on the other Hand, expreſſes his Admiration of the great Sagacity and diligent Obſervation of the *Men*, as he phraſes it, who firſt invented it. Dr. HARRIS, not with leſs Probability, ſuppoſes it diſcovered in ſome of the more ignorant Nations of *Aſia*, and propagated to us by the Will of Providence. And ſurely there can be no Abſurdity, nothing impious or preſumptuous, in ſuppoſing the divine Compaſſion peculiarly exerted, in ſuggeſting to afflicted Mortals, by whatever Means or Inſtrument, a Method for blunting the Arrows, and extinguiſhing, or very greatly reſtraining, the Fatality of this loathſome Deſtroyer: when we reflect,

(1) De variol. P. 74.

flect, that the utmoſt Efforts of human Study and Skill very often fail in the Cure of its ſeverer Degrees; and too probably ſometimes perplex the ſlowly ſalutary Oeconomy of Nature under it. In brief this appeared the *dignus vindice nodus, cui Deus interſit*: and theſe Reflections may deſerve the Attention of thoſe miſtaken Theologiſts, who terming the Small Pox the *Flagellum Dei*, make the very Succeſs of Inoculation (inſtead of obſerving the divine Admonition of *judging of the Tree by its Fruit*) an Objection to the Uſe of it; as it is endeavouring, they ſay, to elude the divine Scourge. But this abſurd Objection might as juſtly infer, that we ought not to uſe any human Means in any Diſeaſe, which may be equally by the divine Will, and certainly is by the divine Permiſſion.

But whoever was its firſt Diſcoverer, it may be inferred from our late Acquaintance with it, that it was not found out 'till ſome Centuries after the Appearance of the Diſeaſe. Our earlieſt Informations of it were from two Italian Phyſicians. TIMONI addreſſed his Account to the Royal Society from *Conſtantinople* 1713, in which he ſays, the *Circaſſians* and *Georgians* had introduced it into that Capital upwards of forty Years before. He obſerves, the more prudent were cautious of uſing it at firſt, but that its ſubſequent Succeſs ſoon extinguiſhed all Suſpicion, Perſons of every Age and Temperament, and both Sexes, having ſubmitted to it without one dying; and this in the worſt Conſtitution of the Air, when the

Doc-

Doctor atteſts from his own Obſervation (having reſided there eight Years) half of the naturally infected died. In ſhort his Eulogies of it are very high, and his Precautions too few. The former indeed might be even neceſſary to encourage the Subjects of the Diſeaſe to ſubmit to ſo novel and paradoxical a Protection from its ſeverer Degrees, as the immediate Reception of its Seeds into the Circulation: But the latter may have occaſioned too general, too crude and precipitate an Application of it in our firſt Inoculators, as if a Miſcarriage had been an Impoſſibility, which Expe-rience ſoon contradicted.

PYLARINI's Letter, tho' ſubſequently placed in *Baddam*'s Abridgment of the Philoſophical Tranſactions, goes as far back as the Year 1701, when he was at *Conſtantinople*; and where, after examining into ſeveral Facts with Regard to the Practice, he conſented to the Inoculation of four Sons of a *Greek* Nobleman of his Acquaintance. He ſays the Inventor is unknown; but that it firſt prevailed in *Greece*, particularly in *Theſſaly*. This Account is wrote with more Circumſpection than the former, as he affirms the Symptoms ſubſequent to Inoculation vary according to the Diverſity of Temperaments; and acknowleges the eldeſt, of 18 Years old, had a very malignant Fever and very bad Symptoms, being ſcarcely out of Danger the 14th Day. He obſerves, that at the Time of his Writing, all but the more timorous were fully convinced of its good Effects, but that the *Turks*, as Fataliſts, rejected it.

I find by a Manuſcript of the late Sir HANS SLOANE's, which Serjeant RANBY has favoured me with, that PYLARINI addreſſed his Letter to the Royal Society, of which Sir *Hans* was then Preſident, in Conſequence of one, the latter ſent to Conſul SHERRARD then in *Turkey*, to enquire into the Practice and Succeſs of Inoculation. But notwithſtanding the Date of PYLARINI's Anſwer, there was no further Notice taken here of the Practice, as the Manuſcript obſerves, till it became effectually recommended to the Attention of the Public by the following Occurrence: to which however we may premiſe, that the Curioſity of that moſt worthy and benevolent Phyſician, which has enriched our Iſland with ſuch a valuable Collection of the Productions of Nature, was a very early Cauſe of our Information on this ſalutary Article.

About the Year 1717 the very ingenious Lady MARY WORTLEY MOUNTAGUE, Wife of the *Engliſh* Ambaſſador at *Conſtantinople*, having carefully enquired into all Circumſtances of the Practice, had her Son, at the Age of ſix, inoculated there: he had about 100 Puſtules, and quickly recovered. And in *April* 1722 her Daughter, about the ſame Age, was the firſt inoculated in *Great Britain*. She had fewer than her Brother, and played about the Room chearfully under Eruption. Here then we may date the happy Commencement of Inoculation, the memorable *Aera* of a great corporal Salvation from the Mortality of the Small Pox throughout the *Britiſh*

tiſh Dominions. And when that noble Lady's very pretty poetical Compoſitions may be overlooked, from the Fluctuation of Language, and thro' the Waſte of Time, that excellent Senſe, which prompted her to more than female Reſolution, in Tenderneſs for her Offspring, and proved in its Conſequences an Introduction to this moſt ſalutary Practice, ſhall do unfailing Honour to her Memory; and *England*, that is ſaid to have been termed abroad the Paradiſe of Women, ſhall exult on this Occaſion, with the juſteſt Gratitude to one, *Dux femina Facti*.

But it remained for Royalty itſelf, for his late Majeſty of ever worthy Memory, and his preſent moſt excellent Majeſty and his late Royal and moſt diſcerning Conſort, then Prince and Princeſs of *Wales*, to compleat and eſtabliſh by their propitious *Auſpices*, and generous Example, a Practice ſo happily introduced. For after the Experiment had been made, under the Sanction of the Royal Authority, on ſix condemned Malefactors ſucceſsfully; five of the Pariſh Children of St. *James*'s were happily inoculated; and a few Families of Diſtinction having the Operation performed on their Children with the deſired Effect, their Majeſties had all their Royal Iſſue then living * inoculated, with

* The MS already mentioned ſays, it was done in Conſequence of the preſent Princeſs Royal of *Orange* being then very dangerouſly ill of the natural Small Pox, which affected her late Majeſty with great Solicitude for the reſt of her Children: and that on Sir HANS's anſwering her Enquiries concerning Inoculation in Approbation of it, but at the ſame time expreſſing his Diffidence, from his Uncertainty of the Conſequences, to perſuade or adviſe the

with an Event truly grateful to every Friend of Reaſon and Liberty. In this Reſpect the Conduct was ſurely worthy the Parents of their future political Family, by admitting the Practice into their natural one, ſince the Maxim of *Regis ad exemplum totus componitur orbis* is generally true: * as if the divine Providence had diſtinguiſhingly conſtituted their illuſtrious Houſe Fauters of the natural Health of their Subjects, as well as Reſtorers of the political Vigour of the *Britiſh* Conſtitution, which had been in ſome doubtful Circumſtances before their critical Acceſſion

the Trial of it upon Patients of ſuch Importance to the Public: Her Majeſty, then Princeſs, aſked him, if he would diſſuade her from it, to which he anſwered, he would not, in a Matter ſo likely to be of ſuch Advantage. To this her final Reply was, that it ſhould be done then, and ſhe immediately ordered him to wait on his late Majeſty, who had alſo commanded his Attendance on the Occaſion. Sir *Hans* obſerving, to the King, the Impoſſibility of being certain that no dangerous Accidents ſhould enſue from exciting ſuch a Commotion in the Blood; His Majeſty replied, that ſuch might, and had happened to Perſons, who had loſt their Lives by bleeding in a Pleuriſy, and taking Phyſic, tho' with the utmoſt Care: and upon Sir *Hans*'s ſuppoſing the few ill Accidents from this Practice might be as fortuitouſly circumſtanced, the Inoculation of the Royal Family was reſolved on, and happily performed.

* Dr. DELACOSTE in his *Lettre ſur L'inoculation de la petite Verole*, printed at *Paris* 1723, excepts the *Engliſh* particularly from this Habit, where he obſerves, ' that the greateſt Part of the *Engliſh* Nation followed the wiſe Example the Royal Family ſet them on this Occaſion; tho' not from a Spirit of Complaiſance for their King, *of which*, he adds in Italics, *one cannot ſuſpect that Nation*, but out of pure Conviction.' It would not have been very adroit indeed for this *French* Author, in a Letter addreſſed to his Moſt Chriſtian Majeſty's firſt Phyſician, to have aimed at a critical Diſtinction of the very different Regards, which a great and rational Majority of the *Engliſh* have paid to their truly Patriot Kings, and their Reverſes, for a few late Centuries.

ceſſion to this Diadem. But this by the Way, this Sally of Duty and Admiration, void of the remoteſt Intention of Flattery.

It is difficult however not to reflect here on the very different Reception of this Practice in *Turkey* and *England*. PYLARINI informs us, that when it firſt reached *Conſtantinople*, it lay, as it were, concealed for ſome Years; being rarely uſed, and but among the meaner Sort. Its Tryal here was highly authentic and ſolemn: never was Mercy more judiciouſly exerciſed; its Diffuſion was quick and conſiderable; and its Patrons were of the firſt Diſtinction. This was really acting up to the Dignity of reaſonable reflecting Creatures; to try and be determined by the very general Event of the Thing, and to be ſuperior to all little Prejudices from the Obſcurity of the Inventor, or the humble Circumſtances of the firſt Subjects of the Invention. It was a ſtrong Contraſte to the Conduct of the Diſtreſſed in a beſieged City, who are ſaid to have rejected the good Advice of the wiſeſt Man among them, becauſe the Man was poor; in which Point (as if there really was in Nature an inſeparable Connexion between Riches and Wiſdom) no ſmall Majority of the Moderns ſeem to harmonize with theſe ſame beſieged, by profoundly enquiring, who, whence, and of what Account and Circumſtance the Propoſer of any Improvement is; with other collateral Queries, equally tending to illuſtrate the Truth or Falſehood of a Propoſition, or the Merit or Futility of a Work, which

muſt beſt appear from the moſt abſtracted Examination of itſelf. And yet ſuch is often our Biaſs to meer Names and Notions, that Dr. WAGSTAFFE, who was accounted a Man of Wit, was ſo moderate a Philoſopher, as to think 'Inoculation's being performed by Women, and among an illiterate People, ſo ſtrong an Objection to it, that he was apprehenſive Poſterity would ſcarcely credit its Reception into the *Britiſh* Palace.' His (a) HIPPOCRATES might have inſtructed him that Experience from every Quarter is to be regarded; and his unwarpt Underſtanding muſt have ſuggeſted, that the Facts, the general Events of the Practice, merited a little of his Conſideration. Perhaps we may not prove more unlucky Prophets in apprehending, that a very extenſive Poſterity, and ſome other Palaces, may gratefully applaud the maſculine Wiſdom and Reſolution, and imitate the exemplary Conduct, of the *Britiſh* Palace, in this Particular.

(a) Μη οκνειν παρα ἰδιωσεων ἰσορειν, ἠν τι δοκει ξυμφερον.
Lib. de Praecept.

SECTION V.

Whether Inoculation conveys the genuine Small Pox? If with leſs Danger and Difficulty than the natural Diſeaſe? And if thoſe once infected by Inoculation are ſecure from a ſecond variolous Infection?

THE conſiderable Oppoſition this important Practice encountered on its Introduction here was extremely natural. It was even right to make every poſſible Objection to it, that was not plainly trivial and cavilling; and highly prudent to wait for its certain and reiterated Succeſs, before a general Concurrence in it could be reaſonably deſired. Hence the late diligent and ingenious Dr. JURIN employed himſelf, for many ſucceeding Years, in a ſtrict Attention to the Evidence which Facts ſhould give of it, publickly ſoliciting all Perſons employed, or concerned, in it, to favour him with exact and impartial Accounts of its Effects and Events. He rightly ſuppoſed that its certain Propagation or Diſuſe muſt enſue, according as a numerous Series of Facts ſhould ſubſcribe to the affirmative or negative Solution of the 2d and 3d Queries prefixed to this Section;

to which I have premiſed the firſt, as ſome Oppoſers of the Method, and particularly Dr. WAGSTAFFE, affirmed it did not give the genuine Diſeaſe. And tho' the contrary of this ſoon became indiſputable in the main, yet as a few of the inoculated had no enſuing Diſeaſe; and as a principal Purpoſe of this Work is to inform all Practitioners, who are hitherto unread on this Subject, at home and abroad, and may hereafter be neceſſarily employed in it, of as much as is material of the Hiſtory of Inoculation, and to initiate them, as it were, in its Rudiments; we ſhall firſt preſent the Evidence of its giving the true Diſeaſe, which being once evinced, a Security from a Return of it muſt follow as a neceſſary Conſequence, if it really be a true Characteriſtic of it, never to afflict the ſame Subject twice.

The general Teſtimonies of the two Phyſicians at *Conſtantinople* have been occaſionally recited. Mr. MAITLAND aſſures us, that three learned Members of the College ſaw Miſs WORTLEY playing about the Room with the Small Pox on her. He affirms, ſeveral Perſons of Diſtinction could atteſt this Fact; and that one of the Phyſicians (Sir JOHN SHADWELL I have heard) had his Son as happily inoculated the following Month. The condemned Malefactors were inoculated in the Preſence of many eminent Phyſicians, Surgeons and others, whom we muſt ſuppoſe ſufficiently attentive to the Progreſs and Event of it. Beſides

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the ſame Operator inoculated eight others in different Parts of *England* the ſame Year 1721; and publiſhed Certificates ſigned by the Parents, Friends and Attendants of the inoculated, atteſting the Reality of the Diſeaſe reſulting from the Operation. It were eaſy to accumulate Evidence on this Point from Dr. NETTLETON and many others; but what eſtabliſhed it beyond all Conteſt, from the Oppoſers own Conceſſion, was their clamouring ſoon after, that the Inoculators diffuſed the natural Diſeaſe; which was certainly their beſt foundedObjection to it: ſince Mr. MAITLAND ſoon acknowleged, that ſix Servants of Mr. BATT's in *Hertfordſhire*, whoſe Child he inoculated, and which they frequently careſſed under it, were all ſeized at once with the natural Diſeaſe, of which one died. He ſays they never ſuſpected them to be catching, which it is too probable he affirmed to them; as he honeſtly acknowleges his Surprize at it, and that he did not think them ſo himſelf. It appears a little inconſiderate here, for a Perſon who had ſeen the *Pus* infuſe the manifeſt Diſeaſe and its Symptoms, not to infer, that it might impart at leaſt a gentle Degree of Infection, which the mildeſt Portion of the natural Diſeaſe has been ſuppoſed by ſome to do. But probably he inferred the contrary from the *Greek* Woman's rejecting the Pock of the Inoculated. Nevertheleſs his Merit, in being an early Inſtrument in the Propagation of it, ſhould qualify any of his Miſtakes, which occurred during the Infancy of the Prac-

tice; eſpecially when we conſider, what his Share of medical Erudition probably was. Dr. NETTLETON, and ſome others, ſoon imagined, but without making a Point of it, that the artificial Diſeaſe tranſmitted a very gentle Infection. However that be, which pretty certainly depends on the State of the Recipient, the learned and cautious Dr. FRIEND at length acknowleged his Conviction of its giving a true Pock. It is pleaſant to obſerve, how thoſe, who firſt denied this, came by Degrees to acknowlege, that it gave ſomething like it; at length to admit that it gave the true Pock; and at laſt that it ſometimes gave a favourable one. They appeared like compelled and unwilling Evidences, grumbling out their half Aſſent to the Truth; or, like the determined Defenders of a beſieged Place, they did all that Obſtinacy could effect, till the unſleeping Artillery of Facts beat them from their untenable Holds. Many Years have intervened, many thouſand *Britiſh* Subjects have been inoculated; and at preſent our warmeſt Zealots againſt the Practice never heſitate to admit its imparting the genuine Small Pox.

That the Peril and Difficulty of it in this Way were greatly leſs than by the natural, we are poſitive no Perſon who has impartially peruſed all our Litigations on it, can doubt for a Moment. Its Continuance and Increaſe to this Period amongſt us is ſuch an Argument of its much ſafer and gentler Operation, as is equivalent to a Multitude of Teſtimonies that might be produced in its Favour;

vour. For, as I have elſewhere obſerved, it was impoſſible, from the Nature of Men and Things, that any Succeſs, ſhort of an extraordinary one, could have continued it down to us. A favourable *Ratio* of it, from the ſtricteſt Calculations, muſt have failed to repreſs the Counter-Efforts of Prejudice, Superſtition and Obſtinacy; and, I may juſtly add, of Faction too. Had it only appeared, that three, four, or even five died in the natural Way, for one by Inoculation (tho' the leaſt of theſe Advantages were no contemptible one) it is clear with me the greateſt of them would not have eſtabliſhed it with us ſo ſoon, and perhaps never. Ruſhing into the Embraces of a Diſtemper, as a Security from its worſt Effects, had naturally ſomething in it very indigeſtible and alarming at firſt: but the ſalutary Conſequences of Inoculation have abundantly demonſtrated of it, what was fabled of the Spear of *Achilles*, that it cures the Wounds it inflicted.

But tho' we require no Reiteration of ſuch Evidence ourſelves, it may operate, by the divine Favour, to the future Preſervation of many. TIMONI undoubtedly ſays the utmoſt that can be true, when he affirms, that no one ever died of it; and this is the more ſurprizing, as he adds, that one half of thoſe ſeized about the ſame Time, in the natural Way at *Conſtantinople*, died. Such a Diſproportion muſt have converted the moſt obſtinate Fataliſt. He acknowleges indeed the Death of two of the inoculated, many Days or Weeks after the Termination of the Small

Pox; but attributes the *Cataſtrophe*, in both, to other Diſeaſes, or morbid Propenſities, plainly exiſting when the Operation was *inflicted*, as I may term it *here*. There is ſome Degree of Candour in acknowleging the Facts, tho' not the utmoſt we could wiſh for on ſo intereſting a Point. He ſhould have obſerved, it was improper to inoculate them under ſuch morbid Circumſtances, which might probably have warded off a natural Infection. Were we to ſuppoſe Inoculation here an epic Perſonage or Character, and then to inveſt him with as much Wiſdom as good Fortune, he muſt have declined, or deferred, theſe particular Conflicts, into which he ſeems to have been injudiciouſly compelled here. But if TIMONI himſelf preſcribed theſe injudicious Inoculations, which does not appear, the *whole* Truth required his embracing ſuch a Mortification, as very few have the Fortitude and Generoſity to do for the Benefit of others. We are to ſuppoſe however, that he knew no others who died in Conſequence of it, which theſe may probably be ſaid to do, and that he was informed none did.

PYLARINI's Commendation of it, which correſponds very well with our Experience, ſays, ſeldom or never has any bad Conſequence been obſerved to happen on this Operation; tho' it has been performed on all Ages, Sexes and Temperaments. We have had Occaſion to obſerve the Succeſs of Inoculation in the five Malefactors (the ſixth being inodorated) under the moſt diſcouraging

ing Situation and Circumſtance, and tunnelled, as it were, with little Streams of *Pus*. But to ſpeak ſummarily, we are informed by Dr. JURIN, that 182 Perſons were inoculated in 1722, of which the Anti-inoculators affirmed two died. Their Death was certain; the Inoculators were for aſcribing it to other Cauſes; but the faireſt and ſhorteſt Way is to charge them to the Account of Inoculation; which makes the Deaths by it, for that Year, one in ninety-one. Dr. NETTLETON's accurate Account of the Deaths by the natural Diſeaſe then thro' many Towns in *Yorkſhire* was, upon an Average, 19 out of 100, or very nearly one in five.

It were eaſy to tranſcribe the annual Events of Inoculation, and of the natural Diſeaſe, from the Accounts Dr. JURIN annually publiſhed from the Years 1721 to 1726 incluſive. But as Dr. SCHEUCHZER has added the Numbers of the Inoculated here in the Years 1728, and 29, and the Event of the Practice then to the former, we ſhall chuſe to preſent our Readers with a ſummary View of its Conſequences here for the firſt eight Years, from his Tables; after obſerving, that the *Ratio* of Deaths in both Ways varied ſomewhat in the different Years.

A Table containing the ſeveral Ages of the Perſons inoculated in Great Britain, *from the Year* 1721, *to the End of the Year* 1728; *together with the Succeſs of the Operation, in the ſame Manner with thoſe publiſhed before.*

Age.	*Perſons inoculated.*	*Had the Small Pox by Inoculation.*	*Had an imperfect Small Pox.*	*No Effect.*	*Suſpected to have died.*
Under 1 Year.	24	24	00	00	2
1 Year to 2	34	33	00	01	4
2 to 3	65	65	00	00	1
3 to 4	91	88	00	03	1
4 to 5	65	63	00	02	1
5 to 10	257	249	03	05	3
10 to 15	140	131	01	08	1
15 to 20	104	95	03	06	2
20 *&c.*	110	91	06	13	2
Age unknown.	7	6	00	01	0
Total	897	845	13	39	17

We ſhall juſt obſerve here, that the Deaths of all who were inoculated within that Term were one in fifty-two, or a ſmall Fraction over 52; of thoſe who took an inconteſtable Small Pox (ſince it had no Effect on 39) one in 50, or a ſmall Fraction under 50: and if we add the 13, who are conſidered as having had an imperfect Small Pox, the Deaths will be one in 50, with much

much ſuch a Fraction above it. It is remarkable however, that we never heard of any one of the laſt having taken a ſubſequent Infection. We ſhall tranſcribe nothing advanced by the Advocates for Inoculation, nor even by any Moderators in the Controverſy, to prove, or to attempt to prove, that the Deaths of ſome, or of any one, failing after Inoculation, ought to be aſcribed to any other Diſeaſe or Indiſpoſition; or even to any previous natural Infection, to which it is certain ſome of them had been expoſed. During the ſame eight Years the Deaths by the natural Small Pox were, *communibus annis*, by Dr. SCHEUCHZER's Tables, one twelfth Part of all the Deaths occurring within the Bills of Mortality.

The Rev. Mr. MATHER's Letter to Dr. JURIN dated March 10, 1721, ſuppoſes 300 inoculated in and near *Boſton, New England*, out of which he ſays five, or at moſt ſix, died, which he is very willing to impute to previous Infection, or other Circumſtances. But we ſhall find by the following Table from Dr. BOYLSTON, there were 18 leſs inoculated: except we chuſe to apply twenty or thirty more (which Capt. OSBORNE ſays he ſuppoſes might be inoculated, but of whom he can give no Account) to make up the 300 computed by Mr. MATHER.

Their

Their Ages.		Suspected to have died of Inoculation.	Had no Effect.	Had an imperfect Small Pox.	Had the Small Pox by Inoculation.	Persons inoculated.
From 9 Months to 2 Years old.	06	06	00	00	00	
2 to 5	14	14	00	00	00	
5 to 10	16	16	00	00	00	
10 to 15	29	29	00	00	01	
15 to 20	51	51	00	00	01	
20 to 30	62	60	00	02	01	
30 to 40	44	42	00	02	01	
40 to 50	08	07	00	01	00	
50 to 60	07	06	00	01	02	
60 to 67	07	07	00	00	01	
Total	244	238	00	06	06	
Inoculated by Drs. *Roby* and *Thompson* in *Roxbury* and *Cambridge*.	36	36	00	00	00	
Total	280	274	00	00	06	
Two inoculated by *Boylston* after his Table was printed off	2					
	282					

This makes the *Ratio* of Mortality by Inoculation in *New England*, in the Year 1721 and 22 exactly one in 47: but to be impartial, it is not unlikely that ſome of the deceaſed might be previouſly

viouſly infected, as they were conſiderably expoſed: and if we turn our Eyes to the Ages of ſome of the Inoculated, we ſhall not be ſurprized to find the *Ratio* ſomewhat leſs favourable in *New England* than in *Old*. *Boylſton* informs us that in 1721 and the Beginning of 1722, 5759 Perſons had the natural Small Pox in *New England*, of whom 844 died. The Numbers inoculated in *Old* and *New England*, within eight Years from the Introduction of the Practice, were 1179, of whom died 23, or one in 51, with a ſmall Fraction above 51. And as the natural Diſeaſe, on a fair Allegation, carried off in both Countries, during that Term, full one in ſix; there muſt have died by it, out of the above 1179, ſuppoſing it to have treated them as it did the reſt, full 196, from which deducting the 23 deceaſed, 173 Lives will remain as the Number preſerved by Inoculation. But we muſt remark, that ſome Allowance is to be made for 45 in both the Tables, on whom Inoculation had no Effect. And this may ſuffice as an impartial Exemplification of the good Effects of that Practice in its Infancy, as we may ſay, amongſt us.

Notwithſtanding which, as a Son of the Duke of *Bridgwater*'s, and another of the Earl of *Sunderland*'s, with a few others of Condition, were among the deceaſed, the manifeſt Advantage of the Practice ſeemed inſufficient to extend it, or even to maintain its Ground: ſince we find a Dormancy or Stagnation of it for ſome enſuing Years, and no Perſon continuing the annual Ac-

count

count of its Events, which ſome probably would, if any thing like the former Numbers had annually ſubmitted to it. This is ſufficient however to demonſtrate the much greater Influence, which the Recovery or Loſs of a Perſon of Birth and Rank may have upon the Fate of any Practice, than its good or bad Event among People in humbler Life; while that of the meer *inops*, *inhumataq*; *turba* is little heard of, and leſs adverted to. But tho' the Death of Perſons of Birth and Condition, where their Virtues and Abilities correſpond to their exalted Situation, be certain and ſignal Loſſes to any Kingdom or People; yet Phyſic, which implies Philoſophy, and does not conſider Heraldry or Station among its eſſential *Praecognoſcenda*, can only eſtimate the general Convenience or Inconvenience of any medical Practice, from the Numbers that recover, or fail, by it; or, as our homely Phraſe expreſſes it, merely by telling Noſes.

But to come to later Times and a different Climate, the Small Pox was brought from *Africa* into *South Carolina* in the Spring of 1738. And it was very generally agreed, by the Friends and Opponents of Inoculation, after the Diſeaſe had finiſhed its Courſe there, that 1000 Perſons white and black, young and adult (tho' the Want of an exact Regiſter is truly to be regretted) had undergone the Operation there. In 1743 I publiſhed an Eſſay at *London* on this Practice, ſubjoining an *Appendix*, which contained the moſt faithful Account of its Event abroad, for which

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my Memory of ſo recent an Occurrence then tolerably qualified me. This, I have heard from different Perſons, had been of ſome effectual Tendency to revive the Practice; whence I have the Satisfaction of conſidering myſelf an Inſtrument, however remotely, of the Benefit which many have ſince received, from a judicious Application of it, by others. To be certain of avoiding all Exaggeration, I eſtimated the Subjects of Inoculation but at 800; tho' Mr. MOWBRAY, who introduced it there, aſſured me, he had inoculated full 450. Four other Practitioners ſoon abetted, and were liberally employed in, the Practice: a fifth at length acceded, and one entirely declined it from religious Scruples. That Performance contained a very ſummary Account of the Caſes of four or five out of the eight Patients, who died after Inoculation: but as I am ſince convinced I omitted one, tho' very unconſciouſly, I embrace this Opportunity of rectifying that Omiſſion. Yet as every one from that Province thought the Number of the inoculated underrated, I preſume it will not be unfair to conclude, on the whole, that one died out of every hundred inoculated there; or, ſuppoſing but 800 inoculated, it will be as one in 89. And if it be conſidered, that a great Majority of theſe were thus voluntarily infected during the raging Heats of June, July, and Auguſt in a Climate, where the Sun is within nine Degrees of the *Zenith* at the Solſtice; and in a ſandy, flat and marſhy Situation, during which Term the natural Diſeaſe cer-

certainly killed at leaſt every fifth it ſeized, the *Ratio* will be greatly in Favour of the Practice. That the Inhabitants were fully convinced of this is manifeſt, from few, very few Subjects of this Diſeaſe having arrived from thence into *England* ſince that Time, without ſubmitting to the Operation. As well as my Memory ſerves me, the Small Pox was carried into *Philadelphia* in *Penſylvania* a few Years after this, where the general Event of Inoculation was ſaid to be ſtill more benign; but having had no authentic Information of Particulars from any Eye Witneſs of the Facts, I only mention this general Rumour, which I never heard materially contradicted.

Dr. MEAD aſſures us, in his Chapter on this Practice, it was certified to him by a very creditable Witneſs, (1) that a Gentleman in St. *Chriſtopher*'s inoculated 300 Slaves himſelf, from the Age of five to thirty, without loſing one. Such Accounts reflect ſome Credit on TIMONI's Report of its unfailing Succeſs at *Conſtantinople*. Our Information of the Event of the Small Pox in *New England* laſt Year makes 5059 white Perſons naturally infected, of whom 452 died, which is, to avoid a Fraction, one in eleven, no unfavourable Proportion. Of 485 Blacks ſeized naturally 62 died, or full one in ſeven. Of 1970 Whites inoculated 24 died, or one in 82; of 139 Blacks 7 died, or very nearly one in 20; a very unuſual Mortality indeed by Inoculation; and which might induce us to ſubſcribe to Dr. MEAD's

(1) De Variol. P. 80.

MEAD's Obſervation of the *Africans* being more fatally obnoxious to this Diſeaſe; were it not ſtrongly contraſted by its extraordinary Succeſs among them at St. *Kitts*; and did we not find in Dr. SCHEUCHZER's Pamphlet the Death of three out of twenty-five inoculated at *Dublin* in the Years 1723, 24, 25 and 26, the much greateſt Proportion ever known. We are informed indeed that two of the three were very ſickly, one but fourteen Months old; but ſuch Circumſtances, tho' mentioned to exculpate the Practice, effectually accuſe the Practitioners of it, under them. The Numbers of the Inoculated then in theſe three different Parts of *America* were 3209, of whom 40 died, or one in 80. Neither the Date of the Year, nor the Mortality of the natural Diſeaſe at St. *Kitt*'s, are ſpecified; but if we ſuppoſe it altogether in *America* as one in eight, the Medium between a fifth in *Carolina* and an eleventh in *Boſton*, a natural Infection muſt have deſtroyed, inſtead of forty, 401, whence 361 Lives may very probably have been preſerved by Inoculation at thoſe Times and Places.

This Preſervation of Life being the intereſting, the cardinal Point, let us recurr to *Great Britain*, ſince the late general Revival and Extenſion of this Method, where we ſhall find the Advantages of it extraordinarily augmented. Some Years ſince a very worthy and ingenious Phyſician at *Wincheſter* informed me by Letter, that in ſeveral Towns of *Hampſhire*, *Suſſex* and *Surrey* about twelve Years ago there were near 2000 inoculated, of whom two only died, both pregnant

Women, and admitting the Operation contrary to the Opinion of their Phyſicians. Since this Revival of the Practice too we find by a Note to the Biſhop of *Worceſter*'s Sermon, that three very eminent Surgeons have inoculated above 1500, with the Loſs of three only. Serjeant RANBY has inoculated upwards of 1000 of theſe, and perſonally aſſured me he never loſt one. Great Circumſpection and Judgment muſt have been neceſſary to ſuch uninterrupted Succeſs. The other Gentlemen were Serjeant HAWKINS, and Mr. MIDDLETON, Surgeon General to the Army. Of 134, moſtly Adults, inoculated at the Inoculation Hoſpital in 1751 and a few Months of 52 there has not been a ſingle Failure. Mr. WINCHESTER, late Surgeon to the *Foundling Hoſpital*, informs me, that 186 of the Children have been inoculated, of whom but one has died. In his private Practice, which he aſſures me, amounts at leaſt to 370, he has loſt but one ſingle Patient. But it would be endleſs to enquire into the Numbers inoculated by Phyſicians, Surgeons and Apothecaries, throughout the two Kingdoms. We ſhall only add here, as it has been publiſhed, that Mr. FREWIN of *Rye* affirms he has inoculated 300 in *Suſſex*, of whom but one died, which he endeavours to attribute to a Worm Fever. But ſuppoſing his Veracity with Regard to the 299, this Evaſion were better omitted. Indeed ſome Inoculators have been injudiciouſly bigotted in this Reſpect, when the plain *Ratio* of Mortality by the natural Diſeaſe, and the Loſs of every Individual, that died from the leaſt apparent

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Conſequence of Inoculation, are ſufficient to convince and determine every Man in his Senſes. The public Papers inform us, that lately at *Saliſbury* two died out of * 268 inoculated. Now if we ſuppoſe the Number of *near* 2000 inoculated in *Hampſhire*, *Suſſex* and *Surrey*, as it is indefinitely expreſſed, to be certainly 1500, the Numbers of the Inoculated mentioned in this Paragraph will amount to 4252, of whom ten died in Conſequence of Inoculation, being one in 425 at the neareſt. Now as Self-love is much ſtronger than public or ſocial, perhaps it will admit of no long Debate, whether the Members of Phyſic, conſidered in the Aggregate, would deſire the Hazard by Inoculation to be leſs: as Navigators are ſaid to apprehend every Body's commencing ſuch, on the Diſcovery of the Longitude.

I ſhall not diſſemble my Knowlege, however, that a few more than thoſe admitted to have failed in the former Paragraph, have miſcarried in and near *London*, during this general Succeſs of the Practice; beſides ſome few I have heard of at a greater Diſtance from it: nor ſhall I conceal my private Belief, that a few more than I have heard of may have alſo failed under it. It is but too natural to ſuggeſt, that wherever the Love of Money was the ruling Paſſion, every ſuch Practitioner would carefully avail himſelf of every Circumſtance, that might conceal or diſguiſe ſuch an ill Event, as would probably contract a valuable Branch of Practice. But as a Majority of the

* A private Letter informs me 422 were inoculated, of whom four died.

Populace, tho' a much leſs Majority than at firſt, are ſtill averſe to this Practice, we muſt impartially infer, that their Promulgation of its ill Succeſs, and the Concern of the Relations and Friends of the Deceaſed, muſt very generally defeat the utmoſt Endeavours of the unſucceſsful Practitioner to conceal it. I have heard the Names of ſeven or eight, who have miſcarried in Town and Country, during my Reſidence of about twelve Years in the former; and am morally convinced myſelf, that throughout *England* they have not, all together, exceeded twenty, if they have amounted to it.

But we ſhall have no Right nor Colour to apply ſuch Deceaſed, in Deduction from the favourable *Ratio* of Inoculation juſt ſpecified; ſince we have not adduced the Numbers inoculated by the ſame Perſons, and recovered, to oppoſe to thoſe who failed, we will not ſay from, but under, their Conduct. It is rather fair to ſuppoſe the Recovered in the uſual *Ratio* of Inoculation. Agreeably to this a Correſpondent lately informed me, they loſt but one in about 400 at *Blandford* in *Dorſetſhire* by it. What they muſt have ſaved then will not be very difficult to compute. A Gentleman from *Oxfordſhire* aſſures me it has been equally ſucceſsful there. I have heard of many, indefinitely, inoculated in *Scotland*, within a few Years paſt, but of none deceaſed by it. I have heard the Practice is become very familiar in *Ireland*, and with a Succeſs very different from its earlieſt Events

there.

there. The ingenious Mr. SHARP, and many other eminent Surgeons within the Bills, have doubtleſs inoculated great Numbers ſucceſsfully: Perſons of inferior Note have not been without ſome Patients in the Method; and I might ſpecify a few I have fortunately attended here myſelf: all which muſt fully counter-balance the Deceaſed by it, who may not have been named. And here it may be high Time to refer the different Peril, by natural and artificial Infection, to the Solution of our Readers, on the Amount and Credibility of the Evidence adduced; which may at leaſt ſave others the Trouble of compiling, as we have done, in order to compare the future Succeſs of Inoculation with the paſt.

An Abatement of the Difficulty and Loathſomeneſs of the Diſeaſe, in Proportion to the Abatement of its Fatality, may be obviouſly inferred. But were a formal Proof required, it is conſiderably anticipated by the Evidence already produced to the Solution of thoſe Queries, with which it is blended. The Inoculators, the Patients, and their Attendants are ſo clear and unanimous on this Point, that I ſhall content myſelf with repeating here what I have abundantly ſeen and formerly ſaid, 'That it were endleſs to recite the Caſes of thoſe who recovered in a very eaſy unloathſom Manner: the very Liſt would be tedious and ſwelling, and, without any Injury to Truth, it may be affirmed they were nineteen twentieths of thoſe who admitted the Operation.' This evidently ſuppoſes at the ſame Time, that

all the Inoculated were not indiſcriminately viſited with equal Lenity, which was generally varied in Proportion to the Quantity of Eruption, as in the natural Diſeaſe. But reiterated Experience has made it very clear to me, that in equal Degrees of Eruption by Nature and Art, the Symptoms attending the latter are remarkably lighter: where there is ſuch a Quantity by Inoculation, which ſometimes happens, as to diſpoſe to a ſecondary Fever, of which I have ſeen a few Inſtances, the Ruffle is lighter, and its Duration leſs: and if about the ordinary Term of its Approach the Inciſions diſcharge more copiouſly, there is very ſeldom a perceptible one, however liberal the Eruption has been. On this Occaſion I have ventured, tho' with much perſonal Reſpect, to diſſent from the experienced Dr. MEAD, who thinks the Diſcharge from the Inciſions (which yet he inculcates us to promote) and the Suppuration of the Puſtules frequently crouding about them, too little to be of ſignificant Service in the Diſeaſe. For if it ſhall appear, that the Diſcharge from the Orifices, on the Maturation of the Puſtules, is often ſufficiently variolous to convey the Small Pox; and that Diſcharge has been obſerved by many Phyſicians and Surgeons to be conſiderably free in thoſe, who have had the leaſt Eruption and mildeſt Symptoms, we cannot well conceive the Diſcharge of ſuch variolated *Pus*, at a critical Seaſon, as inſignificant to the Patient, when we reflect how ſmall a Portion or Particle of it will infect. And this Circumſtance may poſſibly

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be no ill-founded Exception to that generally true Hippocratic Axiom of (a) no ſmall Diſcharge being critical; for tho' the viſible Quantity be comparatively ſmall, its Contents are innumerable and potent.

With Regard to the laſt Query, tho' we might very conſequentially aſſume the future Security of thoſe infected by Art, yet ſince the Contrary has been affirmed in Print a few Years ago, we proceed to a Diſcuſſion of it. To recur here, as we have frequently done, to our firſt Inſtructors, PYLARINI ſays, that tho' the Inoculated had but a few Puſtules they eſcaped future Contagion. TIMONI ſays ſtill further, there are ſome in whom no Puſtule ariſes, but the Places of Inciſion ſwell up into purulent Tubercles; yet theſe never had the Small Pox afterwards, tho' cohabiting with thoſe infected. Our firſt Proof of the Security of Perſons who had formerly the Diſeaſe, from a Re-infection by Art, was prudently made on *Richard Evans*, one of the ſeven Malefactors, who having had the natural Small Pox in Priſon the Year before, was inoculated with five others, by Inciſions abundantly imbued, and thus became the Subject of an *Experimentum crucis* on this Occaſion. Mr. MAITLAND informs us, that on the ſeventh from Inoculation he had no manner of Pain, Heat, or Redneſs in any of his Inciſions, nor any Alteration otherwiſe; but that all of them, continuing pale from the Beginning, dried up on the ſixth. And that

(a) Ὀυδὲν ὀλιγον χρῆμα.

this Indemnity was equally certain from having paſt through the artificial Diſeaſe is evident, from authentic Certificates, that *Elizabeth Harris*, one of the inoculated in *Newgate*, ſoon attended two Patients in the natural Diſeaſe in *Hertfordſhire*, without receiving the leaſt Infection: And when MAITLAND publiſhed his Vindication againſt WAGSTAFFE ſhe had attended above 20 with equal Security. Dr. NETTLETON ſays, the Inoculated have afterwards attended others in the Diſeaſe; and that often Children who had been inoculated lay in the ſame Bed with others in the natural Diſtemper, and all the Time of it, without Infection. To my own Knowlege Miſs BAKER, of twelve Years of Age, having been effectually inoculated, ſome Weeks after her ſpeedy Recovery, made a freſh Inciſion, and, with the Aſſiſtance of a young Lady, applied freſh Pock to it three ſucceſſive Mornings. About the eigthth Day ſhe felt her Head ach ſlightly, and being frightned, revealed the whole Proceſs: but after lying down a little in her Cloaths, ſhe ſprung up ſaying, ſhe would not be ſick any longer, her Head-ach quickly vaniſhing, and no Fever, nor the leaſt Eruption or Diſorder enſuing. Now tho' the Event demonſtrated the ſuſceptible *Pabulum* expelled by the firſt Inoculation, yet the *Pus* ſhe ſo repeatedly infuſed was heterogeneous as Matter, or ſuppurated Blood, and might excite ſome little Diſorder, previous to its Expulſion: and this probably the Matter from a ſimple *Phlegmon* would do. But with Regard to

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the Small Pox, its Seeds here were ſown in an exhauſted Soil. In brief, as Dr. NETTLETON juſtly ſays, the *Quomodo* of Contagion makes no Difference in the uſual Indemnity: and the Continuance of the Practice to this Time is at leaſt ten thouſand Evidences of the Truth.

And yet ſo unaccountable were the Operations of Bigotry and Malevolence (an Error and Crime that too often concur) that in order to ſtrike at the Root of this Practice, and deprive their Fellow-ſubjects and their Species of ſuch a manifeſt Security from this Deſtroyer, many wicked Rumours were ſpread of the Re-infection of the Inoculated; for wicked they muſt have been in the conſcious Contrivers. One Report, that a Patient, formerly inoculated, had died afterwards of the natural Diſeaſe, produced a Letter from Dr. NETTLETON to Dr. JURIN, abſolutely diſavowing the Fact, but acknowleging the Death of an inoculated Infant of fourteen Months old. I have heard myſelf a great many Rumours of the Inoculated being naturally infected afterwards, which, upon Examination, always proved juſt as many Lies. But there never was a malignant one more impudently propagated, than that printed in an Appendix to Dr. CLINCH's hiſtorical Eſſay on the Small Pox. This was in a Letter from one *Jones* a pretended Surgeon at *Oſweſtry* in *Shropſhire*, which affirmed, 'he had 'tried Inoculation (which he could not approve) 'on ſeveral, and eſpecially on a Child of two 'years old, whoſe Small Pox appeared in a Fort-

'night

'night, and ſhe did well. But that in three Weeks
'after ſhe ſickened again of the Small Pox, which
'came out as thick as ever was ſeen, but that at
'laſt the Child recovered.' This malevolent, and, as it appeared, ignorant Hypocrite did not heſitate to repeat the tremendous Name of GOD thankfully for his Bleſſing on this fictitious Inoculation, which was never performed. For on Dr. JURIN's writing to Mr. PARRY Clergyman of *Oſweſtry*, and to Mr. TOMKIES a Surgeon there; though *Jones* ſolemnly averred the Inoculation to have been performed on a Child of his own, he would not ſhew the Inciſions, name the Perſon from whom he took the Infection, nor directly anſwer any of Mr. PARRY's Queries; but told him, that if Dr. JURIN would give him a *handſome Reward*, he would come to *London*, declare the whole Truth, and bring Witneſſes to prove it upon Oath; which the Doctor prudently declining to give, on a further, and we may ſuppoſe, a more earneſt Expoſtulation of Mr. PARRY's, he ſent up, in a moſt ignorant, miſpelt, and nonſenſical Epiſtle to Dr. JURIN, a Confeſſion, that he never inoculated any one in his Life, which indeed any Perſon may credit, even on his own bad Evidence. We have printed the Scroll *literatim* at the Bottom of the following Page as a Curioſity, and the very Quinteſſence of Ignorance. Moderate and common Abſurdity is generally dull, but proves ridiculous enough in the Extreme to afford a momentary Diverſion.

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And indeed it may be juſtly affirmed, that a conſiderable Majority of thoſe, who were thus vehemently prejudiced againſt Inoculation were, like Mr. *Jones*, of the meer Multitude; or as Mr. DUMMER pleaſantly termed the Exclaimers againſt it in *Boſton*, of the *confluent ſort*. The laſt impotent Attempt to revive this Prejudice of a

Letter from Mr. JONES *to Dr.* JURIN *(printed* literatim *from the Original.)*

S I R,

HAVEING conſidered vpon the Affaires of your Deſire and cannot find my Self Able nor Capable to giue you Tru Account of the Inoculation of the Small Pox, nor am Soe well Inſtructed in the Art to Explain the Terminations to be publiſh'd, nor neuer did Deſigne or Deſire it: but what I write was to my Son being he ſent to me to Know my oppinion of the Inoculation: being his children have not had the Small Pox Then: and being it was to him in a Way of Preſwation may be there is Some thing in the Letter more then all Truth: and all the Account That Euer I gaue was to him and noe Man Els: but neuer did I Deſign or Deſire to make any Thing publick that was in it: how it came to you I cannot Tell: I am Sure it did not come vpon my Account: to Any man alive but to my owne Son and not to him to make A publick Game of it: but he Shall Looſe more by it Then euer he can gaine by Them that he gave Account of it. but what foolliſh fancy that was in his head I cannot Tell: If I had any Thing that was worth the publiſhing I Should write It Down with my own hand and Wittneſs to It. and Derection to you or Some other gentlemen for to giue There Aſſiſtance to publiſh it but, as for Really Inoculation I cannot giue you Account of it: for I am Ignorant in it for I neuer Saw it Done by any man In my born Days but what foolliſh Inuention I had in owne head I could not bring it to perffection and neuer gott a Hapeny by nor neuer ſhall: Therefore I haue nothing to Say neither to the one or to the other but pray God to bleſs you all

Your Servant,

DA. JONES.

I cannot Say that I have Inoculat my owne Child nor any body Els becauſe I do not Know what Reall Inoculation is

Oſweſtry, March 11, 1725-6.

DA. JONES.

a ſecond Infection of the Inoculated was in a Pamphlet intitled *Several Caſes in Phyſic*, with the Name of a ſage Fellow of the College prefixed to it. But as that Impoſture was ſeaſonably expoſed, it recorded this imaginary Re-infection leſs effectually, than the certain Errors and Prejudices of its concealed Author.

It being evidently proved then, that Inoculation produced the genuine Small Pox: that, being ſo produced, they were attended with much leſs Peril, Difficulty and Loathſomeneſs than the natural: and that thoſe thus infected were ſecure from all ſubſequent variolous Infection; it only remains to obſerve here, that the Opponents of Inoculation were better warranted in affirming, it did not *always* give the Small Pox. This deſerves our conſiderate Retroſpection, in order to ſuggeſt, what Perſons ſo circumſtanced may reaſonably apprehend for themſelves. PYLARINI ſays, that ſuch of the Inoculated as had no Eruption, were infected promiſcuouſly with others, when the Diſtemper proved epidemic. Out of the 474 inoculated here by the End of 1723, twenty-nine were not infected. Dr. NETTLETON admits that two of his Patients miſſed, one of whom taking the natural Diſeaſe a fortnight after, he imagines to have been inoculated with a ſtale inefficacious *Pus*, which had been taken when the Puſtules were withered and almoſt gone. In *Boſton* ſix miſſed. In *Carolina* I ſaw one white Perſon and three Slaves who did not take, and heard of another. One of the three has

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lived three Years ſince in *London*, never avoided the Contagion, and never took it. Miſs BRUCE of *Mark-lane* was inoculated by Mr. SAVAGE 1751. I viſited her, the Inciſion inflamed conſiderably, but diſcharged little. She had a Fever the eighth Day, which continued 36 Hours, and ſweated profuſely; for having a very free tranſpirable Surface, every little Cold, and all her few Complaints, generally terminated that Way. She had, ſome little Time before ſickening, a ſmall Puſtule with Matter on her Tongue, and afterwards a very little one yellow-pointed, rather than headed, cloſe to one Extremity of her Mouth, which left an obſcure Pit. She had no other Eruption that could be conſidered as variolous, if this uncertain one might, but was purged repeatedly about the uſual Term of purging after the Diſeaſe. On the Termination of her Fever ſhe continued, thro' the whole Courſe of her Confinement, as lively as ever. Serjeant RANBY's Papers contain a Caſe very parallel to this, and ſome Years have intervened without Re-infection, which the Perſon is free from any Apprehenſion of.

Now ſome Perſons miſſing by Inoculation may be conſidered as exempted by the previous Diſeaſe, which two of the twenty-nine mentioned by Dr. JURIN are expreſsly ſaid to be, having been inoculated, as ſuch, for Experiment. It appeared afterwards that one of Dr. NETTLETON's two had had the Diſeaſe. BOYLSTON ſays it was affirmed of three out of his ſix, that they

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were remembered to have had it very young; and a fourth recollected that, when ſhe was very young, the Doctor and Nurſe diſputed whether ſhe had the Small Pox or not, having but three Puſtules, only one of which pitted. The Gentleman in *Carolina*, who was twice inoculated without Effect, was really ſuſpected by his Friends in *England* to have had it very gently in his Infancy in *Yorkſhire*. The four Negroes were all born in *Africa*, and might not improbably have had it mildly in their Infancy. As they are liable to a great Variety of cuticular Diſeaſes, a ſlight Pit or two was the leſs credited for a Mark of the Diſtemper. Dr. JURIN obſerved, that Inoculation miſſed oftner of its Effect on the more advanced than on young Children, it being more likely the former have already had it than the laſt. And we may add, that the Parents of adult Subjects, who might have ſeen them in a mild Small Pox, or over-looked the moſt gentle Degree of it, which has certainly happened, are generally dead when their advanced Poſterity are inoculated; whence any Information or Hint concerning a former Diſeaſe is often totally obſtructed.

Others may have remained uninfected from a total Abſence of this ſpecific *Pabulum* in their Habit. And undoubtedly each Conſtitution is exempted from ſome particular Diſeaſes, and more prone to others. In ſome this Exemption may be only temporary, and depend on any preſent or previous relaxing and evacuating Diſeaſe, as

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chronical Intermittents, Hæmorrhages, Diarrhæas, or an accidental over-moiſt and leucophlegmatic *Craſis*; whence the Powder, as we may metaphorically term the Fuel here, being damped, the variolous Spark is for that Seaſon extinguiſhed. Others may have but a very ſmall Proportion of the Fuel, and ſo very free a Surface, that upon the moſt favourable Mode of Contagion, a copious *Diaphoreſis* may expell, through the exhaling Veſſels, the *Effluvia* which were admitted by the inhaling ones, or by an Inciſion: for ſuppoſing them to encounter nothing aſſimilable in the Blood, they muſt nevertheleſs be expelled, as heterogeneous to it. And this, with very great Probability, was Miſs BRUCE's Caſe, where the *Craſſamentum* was ſcarcely affected enough to furniſh one viſible Efflorescence, and the variolous Cauſe was emitted with the tranſudatory Lymph.

We may juſtly infer however from certain Experience, that wherever Inoculation miſſed, from whatever Cauſe, the Operation was introductive of no other ill Conſequence: though with Regard to their future Exemption, it muſt depend on the particular Cauſe of their late one. Thus if that were owing either to a natural and total Abſence of the variolous *Pabulum*, or to a very gentle Degree of the genuine Small Pox inſenſibly paſt through before, there can be little Doubt of their perpetual Indemnity. But where the Operation has been ineffectual, from the late dormant and unſuſceptible State of the Fuel, whenever

ever thoſe Cauſes depreſſing or damping it are removed, the Subjects are doubtleſs liable to the Diſeaſe. We are to ſuppoſe though in ſuch Caſes, that a Doſe of active variolous Matter has been applied and received. And if the Inciſion has inflamed, though but a little, and a very ſmall Number of Puſtules, which obſerve the *Stadia* of the gentleſt Diſeaſe, appear, I ſhall not doubt myſelf of the Patients future Security. It has been certainly known that one only has riſen, and the Patient, reſiding for years afterwards in the Scene of Infection, has not been viſited with it.

The accurate Dr. JURIN conſiders 5 out of 474, as having had an imperfect Small Pox. This gives us an Idea of ſome Eruption, which did not exactly fill, maturate, or obſerve the uſual Stages of the regular Diſeaſe. BOYLSTON does not ſet down one Patient of near 300 under this Predicament; but his inferior Accuracy and greater Temerity on this Subject are very obvious. It were to be wiſhed we had been informed of any remarkable Sequel to this imperfect Small Pox; though if they had taken the Diſeaſe afterwards, it is probable we muſt have heard it, from one Party at leaſt.

SECTION VI.

Whether there be a material Difference in the variolous Matter, taken from different Degrees of the Diſeaſe? Between that taken from the natural, and from the artificial? And whether either be communicative of any other Diſtemper or Ailment?

THESE Doubts and Objections, but more particularly the laſt, having contracted the early Progreſs of Inoculation among us; tho' their Operation at preſent is much abated: yet in order to reſtrain it always within its juſteſt Bounds, and to avail our Neighbours (who may hereafter admit Inoculation, and have theſe ſame Objections to it repeated) of our Experience concerning them, we ſhall attempt their diſtinct Diſcuſſion in this Section.

It appears the *Grecian* Operatrix was very careful in her Choice of the Ferment, as PYLARINI terms it, extracting the Matter from the ripe and kindly Puſtules of a young Child, otherwiſe of a ſound Conſtitution. He ſays, ſhe re-

jected the *Pus* from the Inoculated as ineffectual. TIMONI also says, they pitch upon some young, sound and healthy Subject, seized with the natural Small Pox, and of the distinct Kind, to take the Matter from. He adds, it was taken the 12th or 13th Day from Seizure, and Experience shews it may be properly taken as soon as the Matter is well concocted, smooth and equal; and that it will be effectual as long as it can be fairly extracted from the Pustules, which, in some Instances it may be a Week, and in others I have seen it a full Fortnight, after the first evident Suppuration. Those Gentlemen who imagine the variolous Matter may impart a gentler, tho' effectual Disease, by its being kept, from an Avolation of its most subtil and volatile Parts, will doubtless prefer its being extracted from some of the Pustules that are likely to dry last, which are generally on the Extremities, and opened or penetrated with the least Inconvenience to the Infected; being replenished too from the later and more dilute Runnings of the variolous Distillation, as we have ventured to term the Eruption and filling of the Pustules. And besides what has been formerly hinted on such Circumstance, it is evident in Fact, that the peculiar Virulence of some Poisons may essentially consist in their most volatile Parts; from the violent Effects of certain chemical Fumes, which leave the remaining Mass but medicinal and sanative. I have been certainly informed, that a Relation of my own dropped down instantaneously dead, on pouring out a large

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Quantity of ſome diſtilled Spirits from one Veſſel into others. And that the Vehicles of ſome Poiſons may become leſs noxious and acrid, from an Exhalation of their moſt exalted Particles is evident, from the Juice of the *Caſſada* Root, which containing certain Death on its firſt Expreſſion, becomes innocent and inſipid in a very few Days; the dry Root, after Expreſſion, making a wholeſome, and not unpalatable, Bread. Be theſe Facts however more or leſs applicable to the different Situation and Age of the variolous Puſtules, Reaſon and Experience concur to make us prefer a bright well concocted Matter, which will not be too mature, as long as it is imputrid and efficacious.

On the other Hand Mr. FREWIN in *Suſſex*, who was pretty active and enterprizing in this Practice, tells us, he took and applied ſome of the Liquid in the Eruptions, while yet in its limpid State; and could perceive no other Difference, than its being ſomewhat ſlower in its Operation. This Practitioner has not informed us, whether the ſame Curioſity prompted him to take this unripe Liquid from the firſt Eruptions that afforded it, which would probably be thoſe of the Face and Neck, and which we muſt have diſapproved for Reaſons already given. Beſides which, I ſhould have doubted, before his Experiment, of the Efficacy of the unripe Lymph of the later and lower Eruptions; as I ſhould the Germination and Fertility of Grain ſowed in its lacteſcent and unconcocted State.

PYLARINI, like a Phyſician, at once inferred the Efficacy of the *Pus* from Inoculation, which the *Greeks* rejected. It was natural enough for him to ſuppoſe, in the Infancy of this Practice, that it would be milder than the natural, as being the Produce of a milder Diſeaſe: but this he modeſtly ſubmitted to further Experience, which, I imagine, will rather induce us to conclude, that what he was for attributing to the Matter from the Inoculated, depended much more on its Application by Inciſion. We have at preſent not the leaſt Doubt of the Efficacy of the Matter from Inoculation. Mr. RANBY's Papers inform me he has found it effectual in the 5th Remove from the natural *Pus*, which I have alſo experienced myſelf; and a Gentleman abroad aſſured me it had the ſame Energy in the 7th or 8th Succeſſion, which we may ſecurely extend to the eight hundredth.

It ſeem'd uncertain as yet whether the purulent Diſcharge from the Inciſions was variolous. Dr. NETTLETON informed Dr. JURIN in 1723, that the Matter infuſed into a Lad unaffected by it was chiefly taken from the Inciſion, the Puſtules being withered and almoſt gone; whence he inferred the Matter from the Inciſions will not infect. FREWIN, who publiſhed in 1749, ſays, that, for want of puſtulary Matter, he often applied the purulent Diſcharge by the Inciſions in the Height of the Diſeaſe, which has ſucceeded well: but that trying the ſame 10 or 12 Days after the Turn of the Pock, it failed. It would have been

been material if he had diſtinguiſhed here, whether or no there was any Puſtule within the Lips, or cloſe on the Verge, of the Orifice, which ſometimes happens. As many of the Inoculated have very few Puſtules, and they are ſometimes diſpoſed to ſcab and wither away with very little Suppuration, it might be of Service to diſcover that the Matter from the Inciſions would infect: but it would be certainly ſatisfactory to find it would, where there was no Eruption from Inoculation, as its Variolosity would greatly warrant the future Security of the Perſon it was taken from. That it is variolous is now evinced. Mr. WALL, Surgeon of the inoculating Hoſpital, infected a Child of ſeven Years, with a conſiderable Eruption of the diſtinct Small Pox, from the ſuppurated Inciſions of a Lady of Condition, who had not a ſingle Puſtule, tho' a Headach and ſlight Fever at the uſual Time of ſickening.

But as the Friends of Inoculation vaunted, in the earlieſt Conteſts about it, that they could ſelect a benign Matter from a mild Diſeaſe and a ſound Conſtitution, for the Infuſion of the Small Pox, which were not always the Circumſtances of natural Infection: while its Opponents declaimed on the great Danger of inoculating, with the Small Pox, any hereditary or contracted Diſeaſes of the Perſon it was taken from; the Certainty, or, if that ſhould be unattainable, the Probability or Improbability of the Aſſertions on each Side deſerves our Conſideration.

My having a large Family obnoxious to this Infection in 1738 rendered me more than ordinarily attentive to every Mode and Circumſtance of it. After a mature Conſideration of the Diſeaſe, of the written Facts and Arguments for and againſt Inoculation, and a conſiderable Meaſure of autoptic Evidence on this Occaſion, had irreſiſtably determined me to prefer the Operation, I could not but approve the Conduct of the firſt Operators, in ſelecting, with all due Caution, the beſt conditioned Matter from the moſt benign Diſeaſe, and healthieſt Subjects to inoculate from; as well as the Expediency of taking it at an Age, when they could not be ſuppoſed to contract any Diſorder from their own Irregularity. I conſidered, and ſtill conſider it, in the important Function of infuſing a Diſeaſe, as the Duty of the Infuſer to avail his Patient of every poſſibly availing Circumſtance; that, in Caſe of a Miſcarriage, which repeated Experience has manifeſted the Contingency of, he may have nothing, but the Want of a ſupernatural Penetration, to reproach himſelf with. And this I am heartily perſuaded is the general Conduct of as many, of every medical Arrangement and Denomination, as are engaged in giving the Diſeaſe. But the preſent Queſtion is, whether this be eſſentially important and neceſſary in itſelf, or only very preferable, from great Prudence and abundant Caution. When I had repeatedly ſeen the Matter taken from one Patient under a very ſmall Eruption, on its Application to half a Dozen, produce a different Quantity of Eruption,

ſometimes very different, in each; and the *Pus* from another under a conſiderably more copious, tho' diſtinct, Eruption, convey no more, and ſometimes leſs, than the former; and generally found the Height or Remiſſneſs of the Symptoms to correſpond with the viſible Quantity of Puſtules, it was impoſſible to avoid inferring, that ſuch Variations reſulted from the different Conſtitutions of the Inoculated. Hence, in the little Eſſay publiſhed about ten Years paſt, I ventured to aſſert, that tho' ſomething might perhaps depend on the Quality of the infuſed Matter, (whence every Operator muſt endeavour to procure the moſt unexceptionable) there was certainly much more in the Diſpoſition of the Body into which, and the Seaſon of the Year when, it was infuſed. In the former Part of my Opinion I have the Pleaſure to be confirmed by the Suffrage of Dr. MEAD, who thinks (a) the Condition of the receiving Body a more important Circumſtance than that of the imparting one. But beſides this moſt rational Inference, there are not a few Facts directly corroborative of it. The firſt Inoculator I ever knew, a Perſon of great Veracity, aſſured me privately, he had inoculated with *Pus* from a Patient loaded with a natural Confluence, of which he afterwards died; and that thoſe inoculated with it did entirely well, without any ſevere or unuſual Symptom. The

* Praeterea plus mea opinione refert, in quale corpus infundatur, quam de quali eximatur peſtilentiae virus.

De Variol. P. 84.

adventurous Mr. FREWIN ſays, he has known 21 Perſons inoculated the ſame Day, from a confluent Pock, which finally killed the Patient; yet all thoſe, he affirms, had it in as favourable a Way as could be wiſhed. He adds, he has inoculated many more with Matter of the malignant kind, without the leaſt ill Conſequence. Now, tho' I am not without ſome Acknowlegement for ſuch an Illumination on this curious Topic, as I ſhall not chuſe to queſtion the Author's Veracity; yet I muſt confeſs the Idea of it gives me a Horror, which is not very philoſophical perhaps; but is ſuch, as would prevent me from troubling him to ſelect Pock for a Friend or Patient of mine. I ſhould have wanted an eighth Convict for the Experiment. The ſole Uſe I would make of theſe Inſtances is this, that ſuppoſing, only for Argument's Sake, ſuch a confluent and malignant Small Pox to reign ſo generally, that no better Matter could be procured, I ſhould prefer inoculating even from them to their natural Infection. I muſt ſuppoſe however, that it is not taken from a Diſeaſe attended with a Gangrene, which we have cautioned the Subjects of the Small Pox to avoid the Stench of. But in other Reſpects enough has been inſtanced and implied, to make the Friends of Inoculation admit, that the Opportunity of ſelecting Matter, from a particular Sort or Degree of the Diſeaſe, is far from being its moſt material Advantage.

We proceed to conſider, whether the infectious Matter is communicative of any other Diſ-

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eaſe, or morbid Diſpoſition, the Perſon it was extracted from might have, or be liable to; which was ſtrongly affirmed and induſtriouſly propagated, by the natural Fears of ſome, and the Perverſity of others. For my own Part I can with great Truth aver, that an Experience of full 15 Years on this Subject, and the utmoſt Reflection in my Power, have convinced me, that it never did, nor can impart any Diſeaſe, but the ſpecific one that produced it; and this, among other Reaſons, for the ſubſequent ones, which I have partly tranſcribed from my former Eſſay on this Method.

The Seeds or Principles of contagious Diſeaſes I conceive, however impalpable, to be as diſtinct as the Seeds of Plants, which may be lodged in ſuch different Soils and Climates, as will either diſpoſe them to Luxuriance, or prevent their very Germination; tho' we cannot, by any Art or Compoſt, make a Pippin produce a Cabbage. The Matter of the Pock, however produced, we find ſufficient, in the ſmalleſt Quantity, to convey the ſame Diſeaſe that effected it: and if it were to convey any other, that other ought, at the very Time, to have been united with what it does convey: for to be transfuſed it muſt exiſt, which the transfuſed Diſeaſe does. But I may be anſwered, that it is not ſuppoſed the Pock ſhall, with itſelf, convey the Plague, Meaſles, or any ſuch acute contagious Diſeaſe, which has a diſtinct external Cauſe; but ſome hereditary or contracted Diſorder of the Perſon it was taken from;

from: which would imply, in ſhort, that you muſt transfuſe his Conſtitution, his *Stamina*, in a minute Part of a Grain of his variolated and ſuppurated Blood; which is not only ſtrongly improbable *prima facie*, but would prove more than the Objectors could intend; ſince ſuch a Commutation might ſometimes prove for the better.

Hereditary Diſeaſes, I apprehend, do not only imply that they may be imparted, but the Expreſſion aſcertains the ſole Manner in which they are, by Conſanguinity or Propagation, ſtrictly: ſince the ſame Cauſe, which often effects ſuch ſtriking Reſemblances in the Features, Make, Complexion, and the very Temper, may produce a ſimilar Conformation in the vital elaborating Organs, and in the vaſcular and nervous Syſtem too; the natural Conſequence of which will prove a Propenſity to the Diſeaſes of the Parent. If they have been the unwelcome Legacy of the Father, we may conſider them as the Conſequences of an extraordinary Infuſion indeed, but of a particular Fluid ſecreted from the vital Maſs, and probably affected with its particular Qualities, but viſibly homogeneous as ſuch, nor ſo ſenſibly perverted in its Texture and Subſtance as Blood variolated into *Pus*; in which Caſe it could ſcarcely fulfill the Purpoſes of Fecundity or Vivification. And if we ſuppoſe the Diſeaſe, which is to be co-infuſed with the Pock, to deſcend from the Mother, we are to conſider the Perſon hereditarily affected, as one partly generated from her Subſtance, and ſolely nouriſhed by her

her Humours for many Months; a Situation, which may well be inferred to impreſs ſuch a Diſpoſition to the Diſorders her Humours are propenſe to, as can ſcarcely be received afterwards from another Perſon. And ſuppoſing this co-infuſible Diſeaſe contracted by the Perſon to be infuſed from, the Argument is ſimilarly applicable. For the *Pus* can no longer be conſidered here as ſincere Blood, in which a Diſpoſition to other Diſtempers might poſſibly reſide; but as a peculiar Corruption of it by the variolous Cauſe, in the Proceſs of the Diſeaſe; which, if it aſſimilates ſuch diſpoſing Particles, muſt ſubdue them to its own Nature, as it inconteſtibly does, and in ſome Proportion to the evident Alteration of their Vehicle; from which Change of Conſiſtence, Figure and Texture, their former Effect muſt ceaſe; if it be as true as probable, that Bodies operate mechanically, and in Conſequence of them. I judge it unneceſſary to ſay any thing of ſuch Diſeaſes as are juſtly termed *Errores loci*; ſince it may be as reaſonable to ſuppoſe the Infuſion of a Hump-back or Diſlocation, as of them. And yet ſuch is the Rage or Whim of Oppoſition, that after the fantaſtical Objections Civility has ſometimes obliged me to liſten to, I ſhould not have been extremely aſtoniſhed, if ſome had been delicate enough to dread being inoculated from a different Sex, from apprehending a Commutation of their own, or the compounding an Hermaphrodite. Such a Reflection may be judged full ludicrous here, but it is difficult to argue

gue with a continual Gravity againſt ſome *Chimeras.*

But whatever Validity or Weakneſs there may be in theſe Reaſons for our negative Solution of this Query, there are very numerous Facts to evince, that no other Indiſpoſition is ingrafted with the Small Pox, from the tranſmitting Body: tho' in Juſtice the Aſſerters ſhould eſtabliſh their Affirmative on Facts (which they may ſafely be challenged to do) rather than leave their Antagoniſts to prove the Negative. This happens nevertheleſs to be no Difficulty; and if the confluent and malignant Small Pox have been proved, in many Inſtances, incapable of generating their own Degree and Mode of this Diſeaſe, it is ſcarcely conceivable they ſhould tranſmit another eſſentially different. Let the following Fact ſuffice here, inſtead of ſome thouſand which might truly be adduced.

The venereal Diſeaſe, known to be as communicable as any, has been particularly dreaded in this Reſpect: ſince doubtleſs its Taints are eradicable in ſome Conſtitutions, but with great Difficulty; and in a few perhaps never entirely. Now a worthy Surgeon of my Acquaintance, of great Truth and Morality, aſſures me, of his his own Knowlege, that a young Lady of a creditable Family was inoculated by an Apothecary, from a Gentleman's Servant in a kindly Small Pox, who had, at the ſame Time, a venereal *Bubo*, and other Symptoms, of which the Apothecary was wholly unconſcious. The inocula-

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ted Lady notwithſtanding did mighty well, and to the End of many Years, which have ſince intervened, had not the lighteſt Symptom of venereal Contagion. Yet perhaps, from the ſubſequent Scabs, Baldneſs and cuticular Effects of both Diſeaſes, which will admit of a moderate medical Parody, it is an obvious Concluſion, that no other would be more likely to be infuſed with the variolous Matter.

In the Heat of theſe medical Polemics, the ill Effects, which put an End to the Transfuſion of the Blood, were alſo preſt into the Service againſt Inoculation; but ſurely without ſufficient Reaſon or Candour: Since in the former a large Quantity of Blood is ſuddenly inſumed to replace as much of the Patient's own; the former of which, however ſeemingly better qualified in itſelf; yet, *quoad hunc*, not having been factured and elaborated by his individual Organs, may have a *Craſis* not properly counteractive to the Tone of his Solids; unfit to correſpond with the Orifices of his Strainers: and, as the Blood was ſometimes inſumed from young eſculent Quadrupeds, it might not afford the preciſe Quantity or Quality of the nervous Secretion, neceſſary to the regular Information and Oeconomy of the human Machine, whence very ſurprizing *Phaenomena* might ariſe: but here the great Diſproportion and Diverſity of the Fluid transfuſed, and that infuſed, are too manifeſt to make us expect any coincident Conſequence. Inoculation had alſo been repreſented by ſome as analogous to admit-

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ting the *Saliva* of a mad Dog into the Habit; as if the Reſemblance of a Bite injected, and an Inciſion infuſed, with a very different Liquid, were to obliterate the monſtrous Diſparity of their general Operation and final Event: when, if it had been rightly conſidered, that the morbid canine *Saliva* ever produces one and the ſame ſpecific and ſurprizingly reſembling Diſeaſe, even in the human Conſtitution, which is not its primary Harbinger, it muſt rather have precluded all Suppoſition, that the Inſertion of the Small Pox ever communicated any Diſeaſe eſſentially diſtinct from itſelf.

On the other Hand Abſceſſes in the *Axilla*, tho' infrequent, happen oftner to the Inoculated, than after the natural Diſeaſe; and are probably owing to the Tendency of Humours to the Ulcers; which Ulcers have continued to diſcharge ſometimes for ſeveral Weeks, and proved ill-conditioned and troubleſome in a few Inſtances. Neither are we without ſome rare Examples, where the Sight and Beauty of an Eye has ſuffered from the artificial Diſeaſe. I knew two Ladies abroad, thus affected, where the youngeſt greatly outgrew the Weakneſs and Blemiſh. The like occurred here above a Year ſince, which is now viſibly abated. But ſuch inconteſtably happen much ſeldomer to the Inoculated than to others: and if we admit that the *Ratio* of ſuch an affecting Diſorder in both Ways may correſpond to that of their different Mortality, we certainly admit the utmoſt that can be true

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againſt Inoculation on this Head. I knew a young Lady of a fine Complexion for this Diſeaſe, who being tired of a little Confinement under a very light Infection, after looking out of an airy Window, complained ſuddenly of a Pain in the *Axilla* of the inoculated ſide, which inflamed, and, forming a large Abſceſs, proved of a ſtrumous Diſpoſition; tho', on a Change of Air, and more compleat Puberty, ſhe grew entirely well. She was often ſubject before to little Eruptions about the parotid Glands, and the Perſon the Pock was taken from of a remarkably pure Surface: whence it ſhould ſeem here, as if either the Diſeaſe, or the ſudden Check of Perſpiration after it, excited the inherent ſtrumous Diſpoſition, which indeed was but moderate, as She continues entirely healthy ſince.

I ſhall conclude this Section with declaring, that although I have tantamount to a Conviction myſelf, that the variolous Matter will convey no Diſeaſe but the Small Pox; and that a well concocted *Pus* from any Mode of it, not accompanied with a Mortification of the Fluids or Solids, will operate but in Proportion to the Quantity and Quality of its Fuel in the Recipient; yet I am entirely of Opinion, that the moſt laudable kind of Pock, and the moſt unexceptionable Habit of Body, ſhould be always carefully ſelected to tranſmit the Diſeaſe; as well from Motives of Prudence, as from a Reflection on the Shallowneſs of all human Science, and the Poſſibility of ſuch Effects as have not hitherto ſupervened.

pervened. We muſt be very ſure, the beſt Diſeaſe from the beſt Habit will not be moſt likely to convey the worſt; and there may be an ill-judged Temerity in our extreme Oppoſition to ſuch of theſe popular Prejudices or Miſtakes, as are founded in natural Love for ourſelves, or on a relative, or ſocial Affection, for others.

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SECTION VII.

Of the various Methods of artificial Infection.

THE great comparative Security and many Advantages of Inoculation being, to our Apprehenſion, irrefragably manifeſted from the preceding impartial Detail of its Conſequences, we proceed to a Deſcription of the different Methods of this ſimple and eaſy Operation.

PYLARINI informs us, the *Greek* Inoculatrix made an oblique Puncture with a Needle on the Middle and Top of the Forehead, on each Cheek, and the Chin; on each *Metacarpus* and *Metatarſus*, and dropt into each a little of the *Pus*, which ſhe had juſt brought warm in her Servant's Boſom, from a young variolous Patient, ſick in the natural Way, and of a good Sort. TIMONI ſays, the Operator is to make ſeveral little Wounds with a Needle in one, two, or more Places of the Skin, till ſome Drops of Blood enſue, when he is to pour a Drop of *Pus*, qualified as above, into each, and mix it well with the Blood, as it iſſues out. Both theſe Phyſicians are here relating the *Greek* Method, the latter recommending, from himſelf, the Muſcles of the Arm or *Radius*; and the former judging

it eligible to make the Punctures in the more fleshy Parts of the Body, as being less liable to Pain and Inflammation, and not interwoven with Tendons. The Wounds were covered with Bandages gently applied, and sometimes half a Walnut Shell was placed concavely over each Orifice; and it was recommended to the Patient to forbear scratching or exposing them to the Wet.

I have read some Author who says, the Wounds in the Face, Chin and Cheeks, were made in Resemblance of the Cross; and that their Number of five referred to the five Wounds of CHRIST. Now, tho' undoubtedly many of these are superfluous and all very injudiciously placed, it demonstrates these innocent well-meaning Creatures never deemed the Practice an Invasion of the divine Prerogative, but very naturally ascribed the good Effects of it to the Father of Mercies, when they enterprized it, as I may say, under the Auspices of those religious Symbols; and seeing none but a happy Issue attend it, never supposed the least physical Reason for the Method; as PYLARINI assures us, the Woman, who gave him a full and plain Account of the whole Process, was entirely ignorant of the true Cause of the Propagation of the Small Pox by Insition. It required an Imagination of more Flame, joined to an odd Perversity of Erudition, to discover, as the Rev. Mr. MASSEY did, that the Devil invented Inoculation, and poor *Job* was his first Patient: tho' perhaps our Phrase of the

Devil's

Devil's being in the Doctor was previous to this amazing Discovery.

Mr. MAITLAND generally made an Incision in each Arm, but inoculated the six Malefactors in *Newgate* in both Arms and one Leg. It was usual with some for a considerable Time to inoculate one Arm and the Leg on the opposite Side. It is said the Ambassador from *Tripoli* here affirmed, that in *Africa* the Disease was imparted by passing a Needle and Thread, that had been conducted thro' a well maturated Pustule, through the Teguments between the Thumb and Forefinger, where they may be pierced without wounding the subjacent Muscle. We are to suppose part of the infected String was secured for some Time in the Puncture.

The *Chinese* are said to have had their peculiar Method of conveying the Small Pox for a long Time past, which cannot properly be named after that Operation in Gardening, ours so greatly resembles. They convey a Pellet of variolated Cotton, with the Addition of a little Musk, into the Nostrils of the Person to be infected, and find it effectual to give the Disease. We have observed, that the Missionaries sufficiently extol the Abilities of their Physicians; but certainly no very sagacious one could devise or encourage this Practice; which seems to have no Sort of Advantage of the common Infection it so greatly resembles, except that of its admitting them to premise a proper *Regimen*, and Preparation, and to select a proper Time of Life, and Season of the

Year, for the Diſeaſe. We ſhall not ſtop here to theorize on the manifeſt Diſadvantages of variolous Inodoration, in Reſpect of Inciſion (ſince it is not clear that a variolated Pill might not be ſwallowed as eligibly) but exemplify the Effect of it from an Experiment, which Dr. MEAD was allowed to make on one of the ſeven Malefactors who were to be infected by Art. This female Criminal, the youngeſt of them all, was about eighteen Years old; ſhe ſickened and recovered as the others did: but he informs us, the Symptoms were much ſeverer; that immediately from the Introduction of the Matter ſhe was afflicted with a moſt excruciating Head-ach, and with a Fever that never intermitted 'till Eruption came on.

Dr. WILLIAMS informs us of another Method of Infection, practiſed among the common People in *Pembrokeſhire*, *South Wales*, as he ſays, for Time immemorial, which may be called the * Infriction of the Small Pox. Some of the dry Puſtules are to be procured, by Purchaſe it ſeems,

* Mr. *Wright* of *Haverfordweſt* obſerves, in his Letter of *February* 15, 1722, on this curious Subject, to Mr. *Bevan*, of *London*, that there are two large Villages near *Milford* Harbour, St. *Iſhmael*'s and *Marloes*, the old Inhabitants of which ſay, it has been a Practice with them Time out of Mind; and that particularly one *William Allen* of the former, then 90 Years old, declared to very creditable Perſons, that this Practice was uſed all his Time; and that he well remembered his Mother's telling him it was ſo in hers, and that ſhe procured the Small Pox that way herſelf.—— This may be reaſonably preſumed to make that Practice of 150 Years ſtanding there, reckoning from this Year 1753 backwards; but how much older it may have been there, or whether the *Circaſſians* had their Method earlier, is impoſſible, perhaps, to determine.

ſeems, and rubbed hard upon the naked Arm or Leg, the Event of which is ſaid to be as effectual, and ſucceſsful, as that of Inoculation. Now ſuppoſing no variolous Steam or Odour to enter by the Mouth or Noſtrils during Infriction, this Sort of Infection will be very ſimilar to that, which is accidentally imbibed by the ſuperficial inhaling and inſorbing Veſſels; and which probably does not occur as often as that by the Breath or Smell. This Device however, ſome medical Gentlemen, who imagine the Surgeons, perhaps, ſufficiently attentive to, and ſucceſsful in, a Monopoly of Inoculation, have mentioned as worthy of reviving; notwithſtanding this ſtill leaves it a Work of the Hand, but ſuch indeed as any Hand may perform. Were we to admit here (which ſeems barely poſſible, and is yet the utmoſt that can be contended for) that the Infriction of this Poiſon, through the Surface of any Limb, may diſpoſe to a greater Derivation of its Conſequences there; yet as there is no palpable Ulcer or Outlet, which ſeems a moſt material Circumſtance; and as our Purpoſe is to regard the Health and Intereſt of the whole Community, or rather of the whole Species, without Reſpect to, or Reſentment of, the diſtinct Emolument of any particular Society, we cannot conſiſtently conſider this Infriction as ſalutarily equivalent to Inoculation. DIEMERBROECK (1) and (2) HODGES, who bravely devoted themſelves to all the reiterated Hazards of the Plague for the Service of their different

(1) *De Peſte.* P. 150, 151, 357. (2) *Loimolog.* P. 240, 241.

Countries, agree, that Iſſues were found the moſt effectual Prophylacteries from that Contagion; and that after manifeſt Symptoms of its Reception, they often diſcharged a thin, bloody, or even blackiſh Matter, to the Preſervation of the Patient. It is ſurely then no unjuſt Inference to argue, that Inciſions, rendered ulcerous by the variolous Contagion, may prove full as attractive of the ſimilar Principle, which has been tranſmitted thro' them to the Blood: We ſhall conclude this Clauſe of variolous Infriction by obſerving, that Mr. *Owen*'s was ſomething more, as he rubbed the Back of his Hand with the Back of a Penknife, 'till ſome little Excoriation or Soreneſs enſued, before he applied the Scab. This was certainly inoculating the Diſeaſe, tho' coarſely, as well as their pricking the Skin with Pins dipped in the Matter; which others of them did.

Having juſt mentioned the prophylactic Uſe of Iſſues, even in the Plague, may we not ſeaſonably ſuggeſt the poſſible Benefit of them to ſuch Adults as dread the Small Pox in every Shape, and yet are obliged to reſide, or come, within the Sphere of its Infection? And ſhould they finally reſolve on Inoculation, may not the Infection of ſuch an Outlet, as the Humours had been for ſome Time derived to, promiſe well for a more liberal Diſcharge than a recent Inciſion? That the Lymph may be infected here rather before the red Globules, does not ſeem to be any exaſperating Circumſtance: And that old

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Iſſues will effectually tranſmit the Contagion to the Blood I have repeatedly, but never unhappily, * experienced. But with Regard to former Iſſues, applied for other Purpoſes, we are to conſider well, whether the Diſorder they were applied for is removed, and how far it may be revived by this Diſeaſe, or its Cauſe be likely to co-operate with the Infection. But to return to the Operation.

As it was experienced that the crural Inciſions, eſpecially in groſs Habits, were more difficult to heal and cicatrize than thoſe in the Arms, the former are now pretty generally diſuſed; and in the main juſtly enough. Serjeant RANBY diſapproves them, from the Inflammations that are generally conſequent of them; and doubtleſs there ought to be ſome better Reaſon for inflicting a tedious Ulcer on the Patient, than the conſequent Protraction of his Surgeon's Attendance. And yet I have imagined, that a reflecting Phyſician may ſometimes incline to an Inciſion in the Leg, where the Patient's Age and Habit, Complexion and Teguments, made him apprehenſive of a plentiful Fuel. Such a topical Ulcer or two, in ſuch a Patient, might certainly prove troubleſome after the Diſeaſe; but every other Indication muſt

* Since the writing this, a Correſpondent from *Southampton* informs me, that Infection by Iſſues was the late general Practice in *Blandford*, *Dorſetſhire*, where they did not loſe above one in 400 of the Inoculated. It may ſufficiently obviate Dr. *Fuller*'s Miſapprehenſion concerning them in Scenes of variolous Infection; he was for drying old ones up, if it might be conveniently done, ſuppoſing they might let in variolous Matter without manual Application.

give Place to one truly vital: and wherever a copious Aſſimulation is expected, every Precaution muſt be uſed to ſolicit its entire external Diſcharge, and all poſſible Diverſion of it from the Face too: ſince if the external *Carotid*, which is ramified over that and the Scalp, tranſmits a conſiderable Quantity of the variolated Blood to the Surface of the Head, it is to be feared the internal *Carotid*, ſpringing from the ſame Trunk, and going to the Brain, and its *Meninges*, may be, in ſome correſponding Proportion, loaded with it. Now if the Stimulation at the Inciſions have the derivatory Conſequences, all Writers on this Subject have allowed; which (abſtracted from Preparation, *&c.*) is probably the critical Advantage and very Hinge of Inoculation, a ſtronger Revulſion from the Head may be expected from theſe crural Ulcers; ſince the deſcending Branches of the *Aorta*, as the *Iliacs*, and their Diviſions again, will probably from hence be charged with a greater Proportion of the variolated Blood, to the Eaſement of the *Carotids* and *Vertebrals*, which can certainly be attended with no bad Conſequence. A greater Suppuration from theſe depending Iſſues, on the Maturation of the Puſtules, will be another ſalutary Conſequence; as that has been ſuppoſed, by ſome, one preventing Cauſe of the ſecondary Fever, which ſo ſeldom occurs by Inoculation, and whoſe Abſence is ſo eſſential an Advantage of it. But after all, we apprehend it will ſeldom be neceſſary to inflict theſe Inciſions in the Legs, which

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in ſome Habits may be attended with very tedious and diſagreeable Conſequences.

It may be uſeful here to conſider, why the Character and Degree of the Small Pox ſhould be eſtimated from their Quantity and Appearance in the Face, which SYDENHAM obſerves, and Experience has confirmed, it is right to do; tho' I cannot recollect that any Writer has explained the *Rationale* of it. This, however, a very unſtrained Extenſion of the Analogy between the Diſtemper and vinous Fermentation will conduct us, I had almoſt ſaid, to a certain Diſcovery of. For as the febrile State of the Blood in the *Apparatus* correſponded as ſtrictly with vinous Fermentation, as was poſſible between a vital and a vegetable Fluid; ſo Eruption as cloſely anſwers to the Diſtillation recurred to, after a certain Term and Degree of Fermentation, for ſeparating the more active, ſulphurous, and inflaming Particles of the Liquor from the more phlegmatic and weak. Now the volatilizing Operation of Heat, one of the moſt grand and efficient Proceſſes in Nature, conſiſts in ſuch a Subtilization of the Particles of its Subject, as renders them lighter than our common *Medium*, thro' which they then neceſſarily aſcend with different Velocities. Hence, as what firſt riſes in the Alembic, and, after Condenſation, runs from the Worm, is ſo flagrant, that it muſt prove deleterious in a very few Ounces alone; ſo in Eruption, the Puſtules that appear firſt, and very generally about the Face and Neck, pretty certainly contain the

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moſt inflamed and volatilized Principles of the Blood: and if the augmented variolous Poiſon is, as ſome have imagined, alſo exalted in the Habit, it ſeems likely, that its moſt energetic Particles will be attached to ſuch Principles. Hence a copious, quick and fiery Eruption in the Face will too certainly indicate an exquiſite and fatal Diſſolution of the vital Conſiſtence of the Blood. Thus the learned HALLER juſtly obſerves, the moſt volatile and active *Miaſmata* break out in the Face. The whole Paſſage well deſerves a * Reference: And in a late Diſorder of my own, which terminated in a liberal *Diaphoreſis*, I experienced the Certainty of it. Perhaps it is difficult to aſſign a better Reaſon than this for the Pits and Scars of the Face by this Diſtemper, while the reſt of the Body is very generally unmarked. But if the Eruptions are diſtinct, gradual, and mildly complexioned there, we have little Reaſon to apprehend, that the latter Runnings on the Trunk and Limbs, tho' numerous, will be pregnant with more viroſe Contents: ſince it has been manifeſt from the different Symptoms and Event of the Diſeaſe, in Patients under equal Eruption, that the *Pabulum* may be nearly of the ſame Quantity in two Habits, yet naturally, and ſometimes from Accident, leſs acrid in one than the other. But that

* Validas hinc particulas, et motus ſui tenaces, caput adire non improbabile. Nonne id demonſtrat argenti vivi effectus in ſolo fere capite? ſpirituum inebriantium velox in caput potentia? camphorae vis ſtuporem brevem excitans? calor faciei et ſudor frequentior quam in ulla parte corporis, miaſmatum ſumme volatilium in facie eruptio?— *Prim. lin. Phyſiol.* § 339.

that the moſt acrid are very generally firſt emitted in all is evident in Fact, from the frequent Remiſſion of the Fever, and moſt of the Symptoms, on the firſt Day of Eruption, and not ſeldom, in a mild Diſeaſe, within a very few * Hours after its Appearance. Where we are pretty certain of Eruption then, does not this ſuggeſt a temperate and diluting *Regimen* in the *Apparatus*, and no ſuch Intenſion of the morbid Heat, as may augment its depredatory Operation? That we are to avoid direct and palpable Refrigeration, in moſt variolous Caſes, is from another Motive, *viz.* that the aſſimilated Particles ſhould meet with no Obſtruction in their Expulſion to the Surface, after they have remained for their ordinary Term within; leſt, at ſo critical a Juncture, their mortal Retroceſſion ſhould be the Conſequence. Moreover, beſides the greater Viroſity of the earlieſt Eruptions, their very Situation may be a perilous Circumſtance; ſince on a ſudden Sinking of the Pox, a premature Detumeſcence of the Face, or an

* I have ſeen a late remarkable Inſtance of this by Inoculation. Miſs FREEMAN was affected in the *Apparatus* with a conſiderable Propenſity to Vomiting, and had a quick febrile Pulſe. Viſiting her the tenth Morning from Inoculation, her Pulſe was calm and all her Symptoms vaniſhed; whence I concluded, tho' it did not viſibly preſent itſelf, there muſt have been ſome Eruption; and, upon a cloſer Inſpection, diſcovered two Puſtules. She might have about 50 in all, but not a Moment's Sickneſs after theſe. Nor is it difficult to conceive, that even before actual Eruption, whenever all the infected Particles are ſo far extruded into the Ducts, that terminate in the Surface, that they cannot retrocede into the refluent Veins (to be ſecreted by any of the viſceral Glands, or glandular Texture of the Brain) all internal Sickneſs muſt ceaſe. This Period may be called the Term of Extrication, to which Eruption ſpeedily ſucceeds.

an insufficient Suppuration there, a more sudden *Metastasis* of the Poison on the vital Nerves may be apprehended. Hence if we could, where Bleeding is indicated in the *Apparatus*, by instituting it in the Foot, and by tepid Bathings and gentle Frictions of the lower Extremities, invite some Portion of the earlier Eruption from the Head, it might be compassing a very salutary Point, which I sincerely think I have seen effected; and which appears to me so essential a Point of Practice, that I hope my Attention to the *Rationale* of it will expiate this Digression from the immediate Subject of this Section.

From an Observation of the Benefits of a free Discharge, our most experienced Inoculators probably extended their Incisions to the Length of an Inch, which Mr. RANBY advises. Whether it were from the same Reflection that they inoculated both Arms, or with a View of making the Scratch appear doubly operose, I cannot determine. Dr. BUTINI, in his late *Traitè de la petite verole*, seems to doubt, whether two Incisions may not produce some Confusion in the Habit, and be attended with a less compleat Discharge than one. Experience however has furnished very numerous Proofs of a sufficient Discharge ensuing from two Incisions, and as gentle a Distemper as could have attended one: yet possibly there may be some Reason for not making two indiscriminately. The most alarming Subjects, I confess, would dispose me most to two Ulcerations: but

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in Subjects, where a moderate Aſſimilation might reaſonably be expected, one may be ſufficient; and in very young ones a ſmaller Orifice might anſwer as well. They are generally diſpoſed to ſpread and dilate in the Courſe of the Diſeaſe, which is no bad Hint of their Service. The Inciſions may be made with very little Pain. I have ſeen a Girl about three Years old ſcarcely wince for one; but have heard that a few, who were apt to be convulſed almoſt at the Sight of a Lancet, and could not be cheated into an Inciſion, have had a ſlight Veſication or two raiſed by a little *Cantharides*, or Epiſpaſtic, applied within the Slit of a cloſely adheſive Plaiſter, and the *Pus* was applied after cutting and removing the Cuticle and Slough. This is conſiderably more painful, but there is little Fear of the Inſect counter-working the Infection, nor of its diſpoſing to a more indolent Ulcer.

I muſt not omit here, that as the *Greek* Woman made her Scratches ſomewhat oblique, Mr. Boylston of *New England* made them quite tranſverſe, and I have ſeen one ſuch Orifice in *London*. What the Operators propoſed by this, or whether they conſidered it merely as indifferent, they can only ſay. Poſſibly they concluded ſuch an Inciſion might be diſpoſed, of itſelf, to a more fretful and inflammatory State, and thence terminate in a more derivatory Ulcer than that from a longitudinal one; and, if this were not the Reaſon, it is difficult perhaps to aſſign a better. But we may obſerve here, that as the

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Lips of ſuch an Orifice would be apt to retrocede more than the other, and that Bandage would not diſpoſe them to Contact, their Retortion would be leſs ſignificant of the Infection's having taken, than it is in the other; which is equally applicable to their Inflammation too. And notwithſtanding there can be little doubt of Infections ſucceeding this Way, as BOYLSTON's Patients very generally took (tho' it could not be ſaid that one certain Puſtule enſued from this tranſverſe Inciſion in a Child of ſix Weeks here) yet thoſe, who are uneaſy about the ulcerous State of the Inciſions after the Diſeaſe, may well incline to prefer the longitudinal ones, the preſent general Practice.

With Regard to the Depth of the Inciſions (which are made over the Contiguity of the *Biceps* and *Bracheius internus* as commodiouſly as any where; and on the Place for Iſſues in the Legs) TIMONI ſays, the Skin is to be ript up a little tranſverſely. PYLARINI ſays, the Women ſeparated the Skin a little from the Fleſh: this ſeems as if they went thro' the *Cutis*. Dr. NETTLETON, who lays little Streſs on the Length of the Inciſions, thinks if they are ſo deep as to cut thro' the Skin in the middle of the Inciſion, they diſcharge the more. I do not find that our firſt Operator, MAITLAND, ſays any thing of their Depth. Some eminent Surgeons at preſent ſeem to make a Point of cutting into, but not thro', the *Cutis*, ſo as to expoſe the cellular Membrane. And this it is ſaid they do to pre-

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vent the Sloughs, that ſeparate frequently when that Membrane is laid bare; and which, they ſuppoſe, render the Ulcer leſs tractable after the Diſeaſe. Such Inciſions I have ſeen, where the Infection has been effectually communicated, but imagined that, in general, they afforded a ſmaller Diſcharge, than thoſe which but juſt expoſe the adipoſe Membrane, by dividing the *Cutis*; very few of which I have ever known unkindly after the Termination of the Diſeaſe, and the cuſtomary Purges. Beſides, if Dr. GRASHUIS is right in concluding this Membrane the Seat, and the *Adeps*, in a great Meaſure, the Subject of Suppuration, it will be no bad medical Reaſon for reaching it. But undoubtedly the leaſt membranous or fleſhy Fibre of a Muſcle ſhould be carefully avoided, as the ſtimulating Matter, admitted there, might erode the *Aponeuroſis* and Subſtance of the Muſcles, and produce a troubleſome ſinuous Ulcer. This was very probably the Caſe of a young Gentleman near *Maidſtone* in *Kent*, who, with a favourable Small Pox by Inoculation, had an Arm ſo terribly ulcerated, that an Amputation was apprehended, tho' at laſt it proved unneceſſary. And beſides the Hazard of ſuch a Conſequence, we have already hinted the Imprudence of infuſing the *Pus* immediately into any larger Veſſel, whence it might be leſs gradually diffuſed thro' the Maſs. The *Engliſh*, who may juſtly be conſidered as the Improvers or Reformers of this Operation, have rendered it much ſimpler, and leſs painful and tedious than it

was

was in *Turkey*. They find no Occaſion for mixing the *Pus* operoſely with the iſſuing Blood; if the ſmalleſt Appearance of the latter ſtain the Skin, they experience their effectual Commixture almoſt a perpetual Conſequence. The Threads, whether of Flax, Cotton or Silk (tho' the two former are chiefly uſed with us) may be conveniently imbued by threading a Needle, edged or even round, with one not too fine, and doubling it. This Needle is to be paſſed thro' two or three well digeſted Puſtules; tho' I have ſometimes obtained Matter enough from one, very ripe and turgid, to infect two or three Subjects. A Length of ſuch Threads equal to that of the Inciſions is to be inſerted into each. Over theſe the Inoculator applies a ſmall Pledget, armed with a Digeſtive, and on this again a ſmall Plaiſter. Mr. RANBY uſes and recommends the moſt ſimple one that will adhere ſufficiently. An eaſy Roller may be applied for a Security to the Dreſſings, tho' I have known the Plaiſter retain the Matter effectually. Some let theſe remain on, one, and others two, Days; the Gentleman juſt cited ſays about forty Hours, but we ſhall find a *plus minus* here immaterial.

From an abundant Caution, which I have always obſerved, the Patient is directed to keep an Handkerchief over his Noſe and Mouth, 'till it is applied. The *Greek* Inoculatrix had the Matter brought, and, we are to ſuppoſe, taken, by her Servant; and ſome have been ſaid ſince to uſe the ſame Precaution; leſt, if the Perſon,

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who infuſes the Matter, had alſo taken it, juſt before, which they thought eſſential, there might be ſome Danger of his giving the natural Infection previous to the artificial. There can ſurely be no Error in great Caution on ſuch important Occaſions; and it was certainly thoughtleſs in the Father of the *Tripolitan* Ambaſſador to ſend his Children to be inoculated at the Houſe of the Infected; leſt the Matter ſhould cool perhaps. But we muſt obſerve, that our reſerving the Contagion in Threads (which we ſhall prove, may be ſuffered to dry too) inſtead of taking it in Shells and Phials as they did, and pouring out Drops of it, is not near ſo likely to diffuſe natural Contagion. Beſides, a Quantity of it kept in a liquid Form may putrefy, as moſt extravaſated animal Humours do; when it may be doubted, whether it will give the Small Pox, and whether it may not give ſomething worſe: as we ſee the Humours of an Egg rendered ſo acrid by Putrefaction, as to become violently emetic, and it has been ſaid deleteriouſly ſo, on ſwallowing a very ſmall Quantity; and what it might do, on being infuſed into the Blood, we can only ſurmize.

Theſe Drops naturally lead me to conſider the neceſſary Quantity, or Doſe, of Infection; and the rather, as ſome of the early Oppoſers of Inoculation, and particularly Dr. WAGSTAFFE, have inſiſted on the Uncertainty of the Doſe of variolous *Pus*, requiſite to different Ages and Conſtitutions, as a material Objection to the Practice. But theſe Objectors would have been

prudent in reflecting previouſly, how they could aſcertain a proper Doſe of the natural Contagion, or determine the Quantities received by different infectious Accidents: ſince this Objection makes very ſtrongly for Inoculation, if the *Quantum* of Infection be truly material, as the artificial may admit of a pretty exact Aſcertainment, the natural of none.

We are happy enough however, in the equal Succeſs of very different Doſes of this *Pus*, to be convinced that this is not the capital, the moſt intereſting, Circumſtance relating to the Operation. A ſingle Spark will explode a Magazine, and a Bonfire can do no more. The *Greeks'* numerous Drops and Inciſions, and *Maitland*'s three largely imbued Pledgets on each Malefactor, terminated ſucceſsfully; and very much leſs has ſometimes excited a very conſiderable, and even a mortal, Diſeaſe. However, as the Application of more than is neceſſary is at leaſt indelicate, let us contemplate, if we can, that Exility of Infection which has ſometimes ſufficed. The worthy and ingenious Dr. NETTLETON, who intereſted himſelf early in this Practice, from a benevolent Principle, informs us, that having found it troubleſome to collect ſuch a Quantity of the Matter, as to infuſe two or three Drops of it into each Wound, of which he made three, he ſecured a ſmall Pledget of infected Cotton on the Wound. We may ſuppoſe he was not long ſolicitous about the Moiſture of his Pledgets, when he avers his Surprize, that the Quantity of

Pus

Pus received into the Veſſels could not amount to the hundredth Part of a Grain: from whence we may moderately conclude, the Doſe uſed at *Conſtantinople* ſufficient to infect above a hundred; and if we ſuppoſe the Weight of a full Drop of this *Pus* to be near a Grain, it will make it ſufficient for many hundreds. But further, the extreme Exility of the Particles of operatively infecting Matter will be ſo evaneſcent and inconceivable, as ſcarcely to allow the Imaginations' inveſting it with a material Form. For in Fact I have known ſuch a ſcarcely diſcernible Particle of *Pus* infect, that I never heard of a Balance exquiſite enough to aſcertain ſuch a Fraction of a Grain as it muſt have been: and if we reflect, that this was but the Vehicle of Infection, our Aſtoniſhment muſt ſtill be heightened. Yet as ſome of the variolous *Pus*, or the *Miaſmata* involved in it, muſt be immitted, tho' in a minute Quantity, to infect, it is evident that the infecting Threads may be paſſed thro' one or more ripe Puſtules, that they may be cut into any requiſite Lengths, and be of what Number or Thickneſs we chuſe. It is poſſible perhaps to weigh a pretty long or thick Thread, while yet uninfected, and after it has been imbued, which may be cut, either while moiſt, or after it is dry again, into ſuch imponderable Lengths of one Inch or leſs, that Infection may really be divided into very minute Fractions of a Grain; and then doſed out, not only to different Ages, but to our Apprehenſions of the Quantity of inherent

Fuel; ſince it may ſeem eligible, to ſome, to apply the ſmalleſt Proportion of the former to the greateſt of this; and to diſtribute it into two Inciſions, for the Purpoſes of a double Stimulation and Diſcharge. This is certainly the beſt Reaſon for making two, and not the Apprehenſion of a ſingle one failing; ſince if there be Fuel in the Habit, and the Spark is applied to it, one will take, and if there is none, two will be ineffectual. But after all, as ſome Few have failed of Infection, where there has been Reaſon to ſuſpect an over-acted and ſimpering Delicacy in a very ſuperficial Scratch, and the Application of the very ſmalleſt Quantity poſſible of Matter: and as ſuch Diſappointments are productive of conſiderable Anxiety, to the Patient at leaſt, good Senſe will ſufficiently inſtruct every one who has reflected on this Subject, that if the Inciſion is not ſo deep as to violate or expoſe any Fibre of a Muſcle or of its Membrane, an extreme Solicitude about its being more ſuperficial is unneceſſary: and further, that tho' a very ſmall Quantity of the *Pus*, if inſinuated, will infect, yet a little more is not likely to have any accumulative Effect; in ſhort, that the preſent Conſtitution and Temperament of the Recipient is the grand affecting Circumſtance.

But whatever be the requiſite Quantity of this Infection, it may be aſked how long its *Medium*, or Vehicle, ſhould remain within the Wounds. TIMONI ſays they were to be covered a few Hours, to prevent the Cloaths from rubbing off the Matter.

ter. PYLARINI ſays a Bandage was applied, but does not add how long it remained before it was firſt removed. We have juſt obſerved that ſome let the infected Threads or Lint lie on 48 Hours; others 24, after which ſome have turned the external Part of the Lint to the Bottom of the Orifice; and all have found the Conſequences without any ſenſible Variation. But that the Principles of Infection are as ſpeedily abſorbed in this palpable Vehicle, as they are inſpired in their aerial one, and perhaps ſtrongly attracted into ſome recipient Bodies, ſeems probable from Dr. NETTLETON's informing us, that he has ſometimes rubbed the Pledget only once over the Wound, without binding it on, and found the Purpoſe ſufficiently anſwered. Serjeant RANBY, who has been long and very ſucceſsfully engaged in this Practice, to the Benefit of great Numbers of high Condition and Conſequence, and to whom I have numerous Obligations upon this Subject, and many other Occaſions, has favoured me with the following Fact on this Point.

Having inoculated a Widow Lady of 30, and calling next Day to remove the Dreſſings, ſhe aſked his Opinion, whether the Pock had taken; and, being anſwered in the affirmative, appeared ſatisfied, and paſt thro' the enſuing Diſeaſe very favourably. But on her entire Recovery, and diſcharging all her medical Attendants, ſhe informed them, that in a very little Time after the Operation ſhe repented of it, and removing the infected Threads ſoon after Mr. RANBY's

Departure, put in common ones, and applied the former Dreſſings over them. It ſeems indeed that we may reaſonably extend what we ſaid on the Quantity of Infection, to the Term of its Application too, *viz.* that a ſhort Contact will probably be ſufficient, and a longer but equivalent: which double Poſition may be ſimilarly verified by a late Inſtance of my own Knowlege. The learned Dr. MATY, Author of the *Journal Britannique*, doing me the Favour of accepting a few Viſits to his three Children, before and after Inoculation, which Dr. D'ARGENT, then practiſing Surgery, performed, in one Arm each; on removing the Dreſſings, there was ſome Doubt, whether the Youngeſt, of near three Years old, had taken, as her Arm was leſs inflamed than her Brother's or Siſter's; tho' I remember I judged it had. It was agreed however to procure a little more Pock, which was applied one or two Days after; notwithſtanding the Inflammation then became a little more evident. She ſickened no ſooner than the others, having the mildeſt Symptoms and ſmalleſt Eruption of the three. Here a ſecond Doſe, which made the Application twice as long, was not attended with the leaſt accumulative Effect; and the ſmaller Inflammation, as all the Inciſions were ſuperficial and pretty equal, was certainly owing to the tender Subject's containing the leaſt variolous Fuel.

It is curious to inveſtigate, and may be uſeful to diſcover, the utmoſt Term for which the variolous *Primordia* may be preſerved in any Material,

terial, with ſufficient Energy to effectuate this Operation. For tho' it may be always recently procurable here, more or leſs, that is not the Caſe in Country Towns, Villages or Seats, where People might deſire the Operation for themſelves or their Friends, and yet be unwilling to go for it, where the Diſeaſe actually exiſted. Here it ſhould be obſerved with Gratitude, that Providence ſeems to have regarded even the Circumſtances of Individuals ſo ſituated and diſpoſed: as we have certain Demonſtration that the *Pus*, however dry, and very probably even when friable, in Threads or Lint, retains an efficacious Vigour for ſeveral Weeks; for a Term ſufficient to convey it a few thouſand Miles at leaſt, tho' we are as yet unacquainted with the exact Commencement of its Inactivity. Materials containing the Cauſe of the Plague have been conſidered as incommunicative of it after a Twelvemonth; but I conceive this to be on a Suppoſition, that the infected Materials were not packed up cloſe, which may make an important Difference: ſince Air itſelf, however pure and ſimple, from very long Confinement and Stagnation, has become putrid and morbific. But let us ſuppoſe the Efficacy of the variolous Vapour to be preſerved as long by Care, as it is without it, and ſometimes is, in Spight of our Carefulneſs to extinguiſh it. This will extend it to ſeveral Months. I knew one Inſtance of a Gentleman being infected on entering a Room, full three Months after a Perſon had lain there in the Diſeaſe. A Surgeon of my Acquaintance ef-

fectually inoculated two Children of a Gentleman's at *Endfield*, with Pock taken to my Knowlege from a Child inoculated in *London* a full Month before. A Woman is ſaid to have been unwaringly inoculated at *Lindfield*, by being bled with a Lancet uſed in taking Pock nine Days before. I have uſed it frequently ſeveral Days after taking, and found its Operation always commence about the ordinary Term, and in the common Way. Finally Dr. BUTINI affirms, it has been kept effectually at *Geneva*, where Inoculation is now happily introduced, full four Months: and it may perhaps appear hereafter to keep for a longer Term, which ſome Gentlemen have imagined might conduce to its milder Operation; tho' this ſeems rather conjectured, than eſtabliſhed on adequate and ſpecific Facts. We have ſufficiently evinced, however, the ſuperfluous Care of conveying it immediately from the Decumbent to the Expectant, and of keeping it warm during the ſhort Interval: as we continually find the *Pus* from Inoculation, which the *Greeks* rejected for this Operation, juſt equivalent to that from the natural Diſeaſe. But on this Occaſion, as on moſt others, we prove the Truth of the Axiom, *Artem experientia fecit*.

The earlieſt Intimation of the Pock's taking ſeems to be a little Itching at, or about, the Orifice: and upon uncovering it a Day or two after, there is often a little Matter on the Dreſſings, and a ſenſible receding of the Lips of the Wound, with a ſmall Redneſs on each or either. Soon af-

after there appears a kind of white ſkin-like Line, or dry Slough, longitudinally in, or rather over, the Orifice, which is conſidered as an infallible Mark of Infection. Serjeant AMYAND was for fixing this Appearance to the fifth Day, which ſeems to be Mr. RANBY's Opinion too; and yet I think it has ſometimes appeared earlier. I have known ſome the ſecond or third Day ſenſible of a Tingling, as they called it, down to the Fingers of the inoculated Arm: and I remember a rugged Youth of Fourteen, who had, on the third, ſuch a ſudden ſtrong Tug, or Contraction of the inoculated Arm, that he gave an inſtantaneous Spring from the Force and Surprize of it; and from his Relation of it I could compare it to nothing ſo much as the electrical Shock. This Lad, who was bound to the Sea, but prepared on Shore, and, as we thought, under a proper *Regimen*, uſed to regale himſelf ſecretly, even after the Operation, with Slices of ſalt Beef he had the Art to procure from on Board. He had indeed a very large Crop of the diſtinct Kind, with the moſt plentiful Suppuration I ever ſaw by Inoculation; yet was very ſoon as alert as ever, his many Pits being very ſuperficial, and without the leaſt Scar or Deformity. But where the Pock does not infect, there is an Abſence of all theſe Appearances and Effects, of which I have ſeen a few Inſtances, that have been more particularly mentioned in another Place.

I muſt not cloſe this Section, without an Apology to the worthy and uſeful Profeſſion

of

of Surgeons, many Individuals of whom I ſincerely eſteem, for my attempting to deſcribe, who am no Surgeon, the different Modes of an Operation which is ſtrictly their Province. It will be no ſlight one I preſume, to aver, that I have repeatedly peruſed, and conſiderably tranſcribed Serjeant RANBY's Account of his own Method, in the Courſe of this Section. Beſides, as a principal Purpoſe of this Treatiſe is to extend the Benefit of Inoculation as far as may be; and to guard againſt every Conſequence of Ignorance, Thoughtleſſneſs, or Temerity, that already has, or may hereafter diſcredit and obſtruct it, by fortifying vulgar Prejudices, I can have little Doubt of the Pardon of all Philanthropiſts of every Profeſſion: ſince it is hoped it will appear, from the general Drift of theſe Papers, that the Writer is incapable of not preferring the public Health and Welfare, to any perſonal Emolument, not juſtly connected with it.

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SECTION VIII.

Of the moſt eligible Time of Life, and Seaſon of the Year, for Inoculation; and the moſt proper and improper Subjects of it.

AS we may frequently obſerve, that, in the Deduction or *Analyſis* of a Syſtem founded on Reaſon, and verified by Experience, after the Illuſtration of a few fundamental Principles, an intelligent Reader anticipates many ſubordinate Points, as neceſſary Conſequences of them; thus, from what has been premiſed of the Nature of the external variolous Cauſe, of its *Fomes* in the human Conſtitution, and of that inflammatory Diſeaſe, that reſults from their Combination, every attentive Reader, methinks, would rationally infer (even ſuppoſing Experience to have been ſilent in the Caſe) that early Youth, and a bland Temperature of the Air, remote from either Exceſs of Heat or Cold, were Circumſtances we ſhould deſire in the Contingence of this Diſeaſe, and conſequently in the Communication of it. Yet obvious as this appears, to be

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rather culpably redundant than defective on the important Subject profeſſedly treated of, we ſhall enquire into the Advantages and Diſadvantages of the different Stages of Life, and of the different Seaſons of the Year, for the Reception of, and all future Immunity from, this Diſtemper.

One conſiderable, and almoſt peculiar, Advantage of Childhood, or even of Infancy, for the Small Pox is, that they cannot be ſuppoſed to have ſuperadded any adventitious variolous *Fomes* to their native Portion of it. Whether this were the prevailing Conſideration, that has determined ſome to recommend Inoculation to Infants at the Breaſt, and even in the very early Months, I am unable to ſay; tho' perhaps it were difficult to aſſign a better. And yet ſuch is our great Diverſity of this inborn *Pabulum*, that I have known an Infant of ſix Weeks die under ſuch a crouded Coherence, from natural Infection, that I was ſurprized to find, in a Subject of that Age, a ſufficient Maſs of Humours, and ſufficiently fermentable, for ſo great an Eruption and Deſpumation; which very much exceeded that of all her five Brothers and Siſters, who were happily and eaſily conducted thro' Inoculation, about the ſame Seaſon. An Inſtance conſiderably paralell to this occurred in the Family of GEORGE TASH, Eſq; of *Ivor* in *Bucks*. The eldeſt of his ſix Daughters was married to CHRISTOPHER TOWERS, Eſq; and took the natural Diſeaſe, of which ſhe was very full, and, with great Difficulty, emerged thro' it. Her five Siſters, from

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ſeventeen to ſeven were inoculated by their Kinſman Mr. HARRIOT, with whom I had the Pleaſure of attending them. The Diſtemper was entirely mild and eaſy, tho' certain and evident: and their Nurſes declared they could not make out above 150 Puſtules among them all.* In this Inſtance indeed, invertedly to the former, the

* This amazing Difference of the Small Pox by natural and artificial Infection, in Perſons of the neareſt Conſanguinity (ſome entire Families having been obnoxious to the confluent, and others only to the diſtinct Sort) has inclined me to heſitate, whether the beſt Preparation and fitteſt Temperature of the Seaſon could be ſolely adequate to the Efficience of it. It is evident the Circumſtance of Age was but little material here, the youngeſt out of twelve dying; the moſt advanced, who could not have a greater Eruption in Proportion to her Size, juſt eſcaping; and either of them certainly having more than the ten inoculated whom I attended. As I am unable then to inveſtigate all the Cauſes of this ſurprizing Difference in Perſons thus related, to my own Satisfaction (the Diſcharge by the Inciſions being very ſeldom conſiderable before Eruption) I would recommend it to the Penetration of others to diſcover, whether the infuſed *Pus* may gradually effect ſuch an Alteration in the Form and Conſiſtence of the Blood, and from thence ſuch a different Oſcillation of the Solids, before actual Sickening, as ſhall concur to increaſe the Excretions of Perſpiration and Urine, with or without a Variation of the Matter excreted, from that in an uninfected State. Any Alteration in the Quality of the former might too probably be indiſcoverable by the human Organs, or even by Experiments; tho' the Urine, from 24 Hours after the Infuſion, might be conſidered by a Phyſician, who for this Purpoſe had obſerved it repeatedly before Infection, while the Patient lived exactly in the ſame Manner. But the Quantities of each might be aſcertained by medical Statics, and compared with thoſe before Infection: and if there was a certain Increaſe of each, or even of either after it, while the other kept up to its uſual Standard, it muſt plainly point to ſuch a gradual Abatement and Diſcharge of the variolous Fuel, as would correſpond to the comparatively ſmall Eruption of the Inoculated; whoſe ſubſequent Security infers that Infection aſſimilates all it finds: but what becomes of that, which does neither appear nor remain

the greateſt *Pabulum* was the oldeſt too: and yet again the ſecond Siſter, the eldeſt of the inoculated Ladies, had the very ſlighteſt Eruption.

It ſeems reaſonable however to conclude, in general, that our Fluids are ſeldom better adapted for this Infection than in our healthy Infancy and Childhood, before we meddle with ſolid alcaleſcent Food. Nor has the bland foſtering Warmth of Infants an equal Tendency to exalt and volatilize the animal Humours, with the Heat that predominates at Puberty, and the Approaches to it; as the Fætor of their Urine and Fæces is manifeſtly leſs, from a ſmaller Proportion of ſulphureous and ſaline Particles. It is highly probable too, that during this Term, there is a ſmaller Proportion of red Globules in the tender Maſs; ſuch a Circumſtance being likely to correſpond better with the Tone of their Arteries, and the Circulation through their minuteſt Canals. Now in theſe Globules we have ſuppoſed the humoral *Pabulum* eſpecially to reſide; and their comparative Paucity in Reſpect of the ſerous ones, if we credit the experienced FULLER, diſpoſes to a leſs inflammatory and hectic State.

In

remain, is the Difficulty. Yet as Experience demonſtrates, that the Pits in the Face from Inoculation are not ſo deep as from the natural Diſeaſe, and never riſe to the Deformity of a Scar, may we ſurmize that the former, before actual ſickening, diſſipates, and expels, by ſome of the fineſt Emunctories, the moſt volatilized and energic Part of this inherent Fuel? And will the erratic Fluſhings that preſent and diſappear, and the ſlight Giddineſs, Laſſitude, and little ſickiſh Fits that ſometimes occur and entirely vaniſh again, before the real *Apparatus*, reflect ſome Probability on ſuch a Conjecture?

In the healthieſt Infants, through the very early Months, it is wholly unuſual to ſee ruddy Cheeks; which muſt be either owing to ſuch a greater Denſity of the Teguments there, as prevents their Appearance, or to the ſerous Globules as yet chiefly circulating thro' thoſe fine capillary, ſuperficial Canals, which are afterwards ſufficiently dilated to admit the larger red ones: the preſent Confinement of which to the larger Veſſels, chiefly, muſt infer their ſmaller Proportion. HOMBERG beſides obſerves the Blood of young Animals to be more acid than that of Adults; and in Fact we find the Fluid ſeparated from it in the Stomach of a Calf manifeſtly acid, which is often the Caſe with Infants alſo; to which they owe thoſe Gripes and curdly Stools, that are pretty commonly relieved by the alcalious Abſorbents. Now ſuch a *Craſis* of the Fluids ſeems ſtrongly contraſted to the intenſely bilious one, which we conceive as very badly diſpoſed for the Small Pox: and indeed the predominant Acid may be conſidered as having a ſimilar Analogy with the cooling Element, to that which the alcaleſcent inflammable *Diatheſis* has with Fire; and ſo may be ſuppoſed reſtrictive of that high Effervеſcence and Fuſion, that precede and accompany the ſevereſt Degrees of this Diſtemper.

A further, and perhaps, not the leaſt Advantage of Childhood for this Malady is, their having no Idea, and of Conſequence, no Dread of it; which there is often much Reaſon to apprehend

hend has conduced to its Fatality in Adults. It may be obſerved too, that the Inaction of Children, before they run about, prevents any Exaltation of the inflammable Principles of the Blood, through exceſſive Motion or Exerciſe. And if we add to this their great Proportion of natural Sleep, in Reſpect to that of Adults, which may not be unſerviceable in a Diſeaſe, wherein Sleep procured by Art has been found ſo beneficial, perhaps we have enumerated all the Advantages, and no very inconſiderable ones, which Infancy has with Regard to the Small Pox.

Yet as it certainly has its Diſadvantages too, we muſt admit firſt, that the natural Strength, or *vis vitae*, is very languid in ſuch tender Subjects; and that ſuppoſing their little Maſs pregnant with a conſiderable Proportion of the variolous Fuel, which will be leſs eaſy to diſcover in meer Infancy, it may require a greater Exertion *ab intra*, in order to a compleat Expulſion of the variolated Blood, than can always be expected from the feebler Contraction of their little Hearts, and the probably ſmaller Elaſticity of their Arteries. This is countenanced by Experience, as a great Proportion of thoſe Few who die of the natural Contagion, before its firſt *Criſis*, Eruption, are Infants, or very young Children, a ſmall Proportion indeed of Adults miſcarrying for Want of it. And this was the very Caſe of the Child of ten Months old, who failed under Inoculation, and whom I have already mentioned, as the ſole Inſtance of my ill Succeſs in it, my

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ſingle Suffrage having been for deferring the Operation. In Reality we find the Pulſe of Infants very generally quick and ſmall, which commonly occurs in the laſt Scenes of moſt Diſeaſes in all Ages; as tho' the early Efforts to live, and Approaches to dying, conſiſted in a ſimilar *Languor* of the vital Motion; and Nature endeavoured, in both, to compenſate for the Infirmity of the *Syſtole* by the Frequency of it. The Cauſe of this may be, that the Ventricles of their Hearts not being contracted with ſufficient Force, for a compleat Expulſion of all the refluent Blood, they have not, ſo diſcernibly, that ſhort, yet ſenſible, Pauſe between the *Syſtole* and *Diaſtole*, which occurs in a more vegete Term of Life; and which is termed by BARTHOLINE, and others after him, the *Periſiſtole*. Beſides which, a greater Facility, and Perfection, of the vital Motions may be contracted from their very Continuance and Reiteration; the Strength and State of the Organs improving at the ſame Time from their Accretion and Exerciſe, which may be termed, perhaps, the Experience of the Conſtitution, or vital Oeconomy.

Furthermore, as we have a manifeſt vegetative Principle inherent in our Fabric, I have ſometimes indulged a Suppoſition, that beſides its general Operation to our Stature and Enlargement, by an Extenſion of the original Parts, throughout the Term of Accretion, there may be a more peculiar Exertion of it a little after the Birth, in a further Number of carnous, vaſcular and ner-

vous Fibrils; which might be involved in the fœtal ones, as the early Rudiments of ſome Plants viſibly are in their Seeds, but which were not extruded or explained in the *Uterus*. It ſometimes ſeems to me, as if Children did not poſitively ſee for ſome ſmall Term after the Birth, tho' their Eyes are not cloſed; but whether the *Velum Pupillae* be always effectually removed before that great *Criſis* of Exiſtence, I ſubmit to more compleat and recondite Anatomiſts. It is ſome Time too before they appear to advert to Sound, or diſcover any Affections from Odours, Nature having judged it ſufficient to ſet the Organs of vital Motion immediately at work; and it being neceſſary, perhaps, from the very delicate Texture of their Brain, that their Senſations ſhould be extremely obtuſe at firſt: as we find Convulſions, and thoſe often without any other ſenſible Diſorder, particularly fatal in this earlieſt Stage of Life. As the Diſſection of the more manifeſt Nerves is ſufficiently difficult; and I have been aſſured by that excellent Anatomiſt, and my worthy Friend, Mr. HUNTER, there is no Poſſibility of purſuing them near to their utmoſt Exility, the ſuppoſed Multiplication or Exertion of other nervous Filaments after the Birth (the Growth or Extenſion of the fœtal ones being indiſputable) is equally incapable of an affirmative or negative Demonſtration. Yet as their extraordinary Portion of Sleep, ſuppoſing them healthy, is a reaſonable Suggeſtion of their ſmall and ſlow nervous Secretion, which ſeems principally

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expended on the immediately vital Motions (all Senſations but that of Pain, all the Paſſions and Faculties, being as yet out of the Queſtion) it is probable that Nature, ſtill plaſtic, may be ſlowly extending, tuning, and poſſibly even further furniſhing theſe Organs of Senſe, and Inſtruments of Motion, after the Birth, whoſe Functions were unneceſſary, at leaſt, before it. And her having no foreign or external Avocations may favour her in ſuch a ſecret Operation; whoſe gradual Effects we ſee, though its certain Mode be inexplicable.

But be theſe Suppoſitions true or falſe, will it be eligible, on their moderate Probability, to congratulate the new and tender Viſiter with the Preſent of a very early Diſeaſe; and to ſubject his vital Oeconomy to ſtruggle, while it may be, in a Manner, but practiſing to move? Beſides it ſeems reaſonable to infer, that Infants perſpire leſs than Children who uſe Exerciſe, which promotes it: for while the Circulation continues languid, there cannot be ſuch an Exertion to the Surface; from the Defect of which the ſore Heads and running Ears they are ſubject to on the Lap may conſiderably reſult: ſince we often find them vaniſh ſoon after they arrive at the free Uſe of their Legs; 'till when they ſeem to be Iſſues of Nature's own Formation to compenſate for the Defect of Perſpiration; as we find the artificial generally relieve, and ſometimes cure, ſuch Efflu̇xions, in groſs humoral Children.

One final Purpoſe of Nature in this ſmaller Perſpiration, at the Dawn of Life, ſeems to be the ſpeedier Accretion and Vigour of the tender Animal, which has been thought to occur in a greater Proportion for ſeveral Months after the Birth, than it ever does within the ſame Term afterwards. It is true that our Trials of the Proportion of Perſpiration, with thoſe of the other Diſcharges, have been hitherto confined to adult Bodies; ſo that its Compariſon with them in Infants and Children has not yet appeared. But it ſhould ſeem ſufficient, in full grown Bodies, for the new Chyle to repair the Abraſions, and replace the *Diſpendium*, of the Machine; while a moderate *Surplus* is neceſſary to be retained in young accreſcent ones, for a farther Addition to them. Now tho' in healthy young Children, who are generally plump and ſuccu-lent, ſhe is not ſuppoſed to retain what is noxious, for this Purpoſe; yet it may be preſumed the Fluids are ſomewhat leſs defæcate for this partial cuticular Diſcharge: on which may probably depend the peculiar Propenſity of young Children to the Chicken and Swine Pox, with other cuticular Diſorders from a ſlight Effervеſcence, to which Adults are rarely obnoxious. It may be doubted alſo, whether the red and white Gum, as Nurſes call their Eruptions in the Month, are not owing to that total Want of Perſpiration, which is probably a Circumſtance of the Fœtus; and which Eruptions, while they tend to defæcate the but very lately eventilated Blood, are,

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perhaps, particularly inſtrumental in commencing the future neceſſary Perſpiration. We muſt ſuppoſe then theſe primary Eruptions, common to all Infants, over, before any Perſon of common Senſe would dream of Inoculation for them.

And even in the Months that ſucceed from hence to the ordinary Commencement of Dentition, which may be ſuppoſed, on a *Medium*, to happen about the ſixth, I have not ſeldom imagined the Acidity, common to Children in the firſt Paſſages, to amount to Acrimony in ſome Habits; whence not only ſevere Gripes and curdly Stools, but even porraceous and mucous ones; in which Caſes, as I ſhould apprehend, that Infection would have but little Tendency to mend the unbalmy State of the Blood; I ſhould be fearful too, that ſuch an irritable Condition of the Bowels might prove a very exaſperating Circumſtance, and diſpoſe to a * perilous Dyſentery, as the variolous Fuſion of the Humours advanced. Nevertheleſs if any, overlooking the Chance of ſuch Effects, were determined to inoculate within this Term, the Stools ſhould be conſidered, and ſuch morbid Appearances of them be effaced before the Operation.

* An Infant of ſix Months, inoculated laſt Seaſon, had Stools, in the *Apparatus*, conſiderably ſtreaked with Blood; but which changed very ſoon after Eruption. They gave me but little Alarm in this Stage, as the Fever and other Symptoms were moderate; and as I judged them but equivalent to a ſalutary Hæmorrhage by the Noſe, which would probably have happened to the ſame Patient in a more forward Term of Life. She had between twenty and thirty Puſtules in all.

I have likewiſe repeatedly obſerved, that in plump, full Infants, the Teguments are harſher, as well as thicker, than one at firſt would expect. The preſent Depth of thoſe Blood-veſſels, which prove apparently turgid as they grow up, is one Argument, at leaſt, of this; and ſuggeſts no bad Hint of that Abhorrence, which Nature has to Veneſection, during this Stage of Life. There is a much greater Difficulty in raiſing and detaching the Skin by the Fingers from the ſubjacent Muſcles, than in thoſe who are advanced enough to play about alertly; as if a further Extenſion of the Body was neceſſary to that Freedom and Extenuation of its Teguments, that is one happy Circumſtance for the Reception of the Small Pox, as it diſpoſes to an eaſy Egreſs of it: And this greater Reſiſtance at the Surface is likely to be of the worſe Conſequence, where the Contractions of the Heart are more feeble; our moſt hopeful Proſpect, in ſuch a Situation, being the ſmall Quantity of the Matter expected to be extruded. For, with Regard to the Exility of the Veſſels, the Straitneſs of the excretory Ducts, and the State of the Integuments, there appears to be too much Crudeneſs and Immaturity in the early infantile Syſtem, to render it very pliable to this eruptive Diſeaſe; whence the previous Extrication is often attended with more Difficulty in this, than what uſually attends an equal variolous Aſſimilation in a ſubſequent Stage.

When the Infant advances a few Months, the Term of Dentition begins, tho' often varying

three

three or four in different Bodies. As this is a very painful and morbid Period with ſome, and not ſeldom attended with febrile and convulſive Diſorders, I ſhould by no means be for ſuperadding the Operation of the variolous Cauſe to them, or to the probable Intervention of them. Dr. FULLER thinks it dangerous in Children at this Term, and I have already mentioned a Patient of my own miſcarrying under Inoculation at ten Months. Yet I have no Doubt but many inoculated in the tender Months have done, and may do, very well: while this is tranſcribing, April 1753, a lovely Babe of ſix Months has got thro' all the little Peril of the artificial Diſeaſe; and tho' her left Eye * was weak and watry from the Birth, there has not been the ſlighteſt Eruption near it; and what little Alteration has happened to it is rather for the better. It is indeed a reaſonable Preſumption the ſame Individuals can never undergo a ſmaller Eruption at any ſubſequent Term: tho' I muſt confeſs, upon the whole, for the Reaſons already ſpecified, I imagine it is not fully availing ourſelves of every favourable Circumſtance. Should they happen to have ſuch ſore Mouths as ſometimes occur in the Diſeaſe, which may prevent their ſucking or drinking, their Situation would be dangerous; a material Circumſtance, which I find Mr. RANBY

 has

* A gentle ſmall Bliſter was applied behind the left Ear, which roſe and run well: this Effluxion was directed to be encouraged as it dried, by frequent Frictions; and the Inciſion was made in her right Arm, inſtead of the left.

has alſo adverted to, who diſapproves Inoculation, under four Years of Age. It appears from Dr. SCHEUCHZER's Tables, that out of twenty-four inoculated under one Year old, from the Year 1721 to 1728, incluſive, two died. Mr. GOLDWYER of *Saliſbury*, informs me, that one of the four dying there after Inoculation was a Child about twelve Months old, who had but ſeven Puſtules, and was twice purged; but had a Fever very ſoon after from Dentition, and died on cutting a ſecond Tooth. BOYLSTON inoculated but ſix, from nine Months to two Years old, who all recovered; but ſuch a Number is too ſmall to form an Eſtimate from, as the natural Diſeaſe does not generally kill more than one in ſix or ſeven.

The Duration of Infancy ſhould ſeem, from the Etymology of the Word, to determine with the fair Commencement of articulate Speech. As this is conſiderably various in the little Individuals, to give it a reaſonable Extent, we ſhall ſuppoſe them about two Years of Age; when we may as generally allow them Strength and Hability for Self-motion. When their Terrors from the firſt Eſſays of this new Faculty are juſt ſubdued, it is pleaſant to contemplate the Exultation of the pretty Innocents in the early Exerciſe of it: and perhaps no future Vehicle, by Land or Water, will ever give them an equal Delight with the Novelty and Conſciouſneſs of this ſelf-moving Power. Their *vis vitae*, their nervous Secretion, and cuticular Diſcharge are now increaſed, to their manifeſt Vividity and Lightneſs; and yet there is

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no conſiderable Extenuation of their Advantages for the Diſeaſe, if they have been properly dieted and regulated. It muſt be conſidered however, that the painful and febrile cutting of their Eye Teeth now occurs to many: And when we reflect on the great Majority of Deaths under two Years, we ſhall probably judge it political, at leaſt, to get the young variolous Volunteer (who muſt, at this Age, become ſuch by his natural Proxies) conſiderably beyond the ſlippery Borders of it. Nevertheleſs, where the natural Diſeaſe ſhould be very epidemical and unuſually fatal to Children then; where the Subjects were not ailing and infirm for that Age; and it was inconvenient to move them from the Sphere of Infection, I ſhould think the Operation, even at this Term, eligible; but from ſuch Circumſtances only. From thirty-four inoculated here, within the Term of eight Years, from the Age of one to two, four died, which is nearly one in eight: one of the late deceaſed at *Saliſbury* was alſo under two Years, and died of a confluent Diſeaſe.

From two upwards to five the Number of Funerals is ſenſibly contracted; tho' ſtill remarkably more than in the ſucceeding Stage. And indeed I ſhould conſider the Age of five and its *Environs*, which I may call from four to ſeven incluſive, as a very eligible Term for Inoculation: tho' undoubtedly one Child may be as proper a Subject for it at three, as another at four, or upwards; ſuch different Fitneſſes being of Courſe

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ſubmitted to the particular Gentlemen conſulted on ſuch Occaſions. Their natural Diſpoſitions now become more manifeſt: their Faculties begin to dawn through their Looks: their collecting and compounding Ideas very entertainingly evidence the firmer, and, if I may be pardoned the Expreſſion, the more inhabitable Structure of the Brain, and the compleater Functions of its ſenſitive Emiſſaries. A proportionable Invigoration of the vital ones is a very obvious Inference. Their Teguments are generally as well diſpoſed for the Diſtemper now as they are ever like to be: As yet we may ſuppoſe few of them affected with much Dread of it; and when the Operation is reſolved on, a Majority of them may be eaſily deceived into it, without infuſing the leaſt Apprehenſion of any ſubſequent Diſorder. And now as ſoon as the enſuing Diſeaſe is happily determined, which is next to univerſally the Caſe, what Hours, what Years of Anxiety are the Offspring delivered from, by this prudent, this truly parental and early Pre-occupation of the Small Pox, at that Seaſon of Life, when the mild and ductile Strength of the Subject concur, with many other Circumſtances, to conſtitute the moſt benign Temperature for the Diſeaſe! a Situation not always to be equalled afterwards. About this Time too Children generally become more tractable; and Miſs begins to form a ſufficient Eſtimate of Beauty, to abſtain from ſcratching or picking, if diſpoſed to it: beſides, if a more conſiderable Eruption, than what

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uſually happens to the inoculated about this Age, ſhould occur, there is ſtill a ſufficient Term to out-grow them before Maturity. Of ſixty-five inoculated here, within the Term already mentioned, from the Age of two to three, but one died. One of the four deceaſed at *Saliſbury* was about three Years old, and had a confluent and chryſtalline Pock. BOYLSTON reckons fourteen inoculated from two to five Years old, who all recovered, by his Tables.

From ſeven to Puberty, or its near Approaches, we ſhall conſider as the next favourable Period for the Operation. The remarkable Decreaſe of Funerals in this *Stadium* evinces a conſiderable Invigoration of the Strength, and ſome Approaches towards the Knitting and Eſtabliſhment of the Conſtitution. But as the *Vis vitae* (ſince we continually ſuppoſe a healthy Subject) is abundantly ſufficient now, their Teguments become a little more renitent, not from Crudity, but Firmneſs. If they have been indulged in taſting ſtrong Liquors and a plentiful Courſe of animal Food, the variolous Fuel may have been augmented alſo; (tho' the different Energy of the connate Portion is a moſt important Circumſtance) and, what we have obſerved may be of ſome bad Conſequence, many within this Term have a Dread of the Diſtemper. Their frequent Uſe of good ripe Fruit, if ſound and not exceſſive, can be of little Diſſervice to them; and we may pretty juſtly conclude, on the whole, that they get as ſafely through Inoculation as thoſe within the

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former Term. In a hundred of each inoculated, it is very probable the Number of Eruptions of thoſe in the later *Stadium* would exceed; tho' it really happens to a Majority of theſe, to have no more than they undergo very eaſily. So that where they have not had the Diſeaſe in any of the preceding Terms, and are likely to live in the Way of it, it ſeems entirely prudent to embrace it in this. Out of 257 inoculated here, within the aforeſaid Term, from the Age of five to ten, three died, 249 only taking a compleat Small Pox, which makes the Proportion dying by Inoculation, within thoſe Ages, one in eighty-three. BOYLSTON has but ſixteen inoculated, from five to ten, who all did well. Perhaps, on the whole, no other Stage of Life is more eligible than ſuch an Interval, for the Operation.

At the Evolutions, and in the early Progreſs, of Puberty, there is a ſtupendous Alteration in the animal Frame. The vegetative Principle is now extraordinarily exerted in the Explication of particular Organizations. Even new Parts emerge, new Secretions ſpring, and a new Paſſion, or a very different Direction of a former one, attended with a various Modification of thoſe already experienced, enſues. The Voice contracts another Tone; the whole Form, the Eyes and Aſpect, another Air; they imbibe, and they impreſs, Affections entirely novel; and a conſcious *Je ne ſçai quoi*, which Looks can only expreſs, characterizes this Spring, this firſt Germination of the ſelf-renewing Façulty. The

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natural Humidity is apparently now in its full Proportion; and the cutaneous Diſcharge in its full Vigour, which, in ſome Habits, becomes leſs agreeable, tho' inoffenſive in moſt, and in a few, as it is recorded of ALEXANDER, even redolent. Very probably Mr. THOMPSON thought of this laſt Circumſtance, in his admirable Deſcription of Spring, when, ſpeaking of a Virgin in this Stage, he ſays, 'She breaths of Youth.' Not incorreſpondent to ſuch a State is that of the *Magnolia* (as the Curious term the Tulip-leaved Laurel) and ſome other flowering Trees, of ſeveral Years Growth before they bloom; previous to which a new Series of Veſſels are either then formed, or firſt explained, and infuſed with a peculiar Fluid from the Plant, diffuſive of its Odours, and preparatory to the Continuance of its kind.

The moſt univerſal Effects in the Creation contract a Familiarity, from their Frequency, that renders them, how charming ſoever, too cheap to the ſuperficial Obſerver: But the philoſophical and contemplative, who inveſtigate them as far as human Study, and their Portion of human Penetration, enable them; while they diſcover enough of the interior Oeconomy of Nature in the Renovation of all Bodies, to engage their moſt rational Admiration; at the ſame Time experience ſomething ſo latent, ſo coy and inacceſſible, as I may term it, in the efficacious Proceſs, that it immediately refers them to the ſuper-intendant Volition of a ſupreme and perfect

fect Intelligence, with a *Deus! en Deus!* and obliges them to conſider the whole as miraculous, in ſpight of its continual Occurrence, its unfailing Regularity and Tenour. But to return from ſtill Life — We may well infer, that about this Period, in the human Conſtitution, the high and inflammable Principles of our Maſs become more copious and energic; the natural *Fomes* of the Small Pox is further diffuſed through the augmented and expanded Maſs; the adventitious may be conſiderably increaſed by high and ſuperfluous Aliment; and both may be exalted by violent Exerciſe. During this Term, under which, to make it the more comprehenſive, we ſhall include the Subjects of the Diſeaſe from fifteen to twenty-five, accidental Infection has undoubtedly a conſiderable Number of Victims; the natural Heat and Vigour too frequently co-operating with the inflammatory Symptoms to their own Extinction. Yet may it be neceſſary to add here, that as this Stage is generally preferable to any ſubſequent, it ſeems better to inoculate now than to poſtpone it; tho' in general we are to expect a more liberal Eruption, and often a higher Degree of variolous Symptoms than in the former Periods. SCHEUCHZER's Tables make 140 inoculated here from ten to fifteen, of whom 131 only took completely, and but one died. From fifteen to twenty Years, 104 were inoculated, ninety-five compleatly taking, three imperfectly, and two dying, that is one in forty-eight nearly. BOYLSTON has 29 inoculated, from ten to fifteen,

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who all took and recovered; and fifty-one, from fifteen to twenty, who all took, and of whom one died.

From twenty-five Years upwards, it is highly probable, the Conſtitution never meliorates for the Reception of the Small Pox; unleſs from the Accident of ſome extraordinary Relaxation or Diſcharge, that damps or leſſens, for a Time, its natural Fuel in the Blood, without leaving any morbid Impreſſion on the *Viſcera*. The Teguments, and the Solids in general, approach to a more tenſe and rigid State; the red Globules probably become more fibrous and compact; whence a greater Orgaſm, from a fiercer Luctation with the variolous Infection; tho' little conducive to the Security of the Patient, whoſe phyſical Situation, in this Caſe, may be compared to the political one of over-wealthy and potent States; whence Luxury, Faction and thoſe civil Confuſions increaſe, which ſometimes terminate in their Diſſolution, as the Roman Lyric ſays of antient *Rome*,

Suis ipſa Roma viribus ruit.

Such Conſtitutions ſeem directly oppoſite to thoſe which SYDENHAM, I imagine, has deſigned under his εὐμεταβολοι; whoſe mild Fluids ſubmit to a ſmall Aſſimilation; and whoſe free Ducts and yielding Teguments afford it a ready Eruption without much perceivable Sickneſs. And tho' ſuch contraſted Conſtitutions appear in the ſame,

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as well as at different Stages of Life; yet as we are here abſtractedly enquiring into the various, and general Aptitude of the different Stages for Inoculation, we may affirm, the unyielding and inflammable Subjects will moſt frequently occur from about thirty or thirty-five, when the Body has generally attained its moſt compleat Euexy and Vigour, to about fifty in healthy Men; in the more robuſt, to fifty-four or fifty-five, when the *cruda viridiſque Senectus* has been reckoned to begin; and which may extend in ſtrong *Stamina* even to ſeventy, at which Time decrepit Age commences with a Majority of thoſe, who arrive at theſe Years. Undoubtedly during what may be called the robuſt and ſettled Term of Life, the Space between Youth and Age, which may be ſettled pretty generally in this Climate from thirty to fifty (when the Subjects will correſpond pretty well with the καθεςηκοτες of HIPPOCRATES) the natural Diſeaſe is conſiderably depredatory and fatal; and we may reaſonably expect the *Ratio* of Inoculation within the ſame Term to vary in ſome Proportion. Happy and eaſy are thoſe who have fortunately paſt thro' a much earlier Infection! We are uncertain from Dr. SCHEUCHZER's Tables, how far beyond the Age of twenty they ventured to inoculate within the firſt eight Years of the Practice. He puts down however 110 inoculated who were upwards of twenty Years, of whom ninety-one took compleatly, ſix imperfectly, thirteen not at all, and two died, or one in forty-

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five of thoſe who fairly took. BOYLSTON has ſixty-two inoculated, from 20 to 30, of whom ſixty took, two miſſed, and one died. We might indeed, once for all, have referred our Readers back to the Tables of thoſe Writers, which we have reprinted *figuratim*, to calculate for themſelves; but the Proportion of Deaths and Recoveries from Inoculation conſtituting a very eſſential Part of this Work, ſuch a Recital here may prove the moſt venial Redundance in it.

Were it neceſſary to advance to the later Stages of Life, we have TIMONI's Affirmation, 'that it has been performed on Perſons of all Ages, without any one being found to die of it.' PYLARINI, with more Reſerve, ſays, 'ſeldom or never has any bad Conſequence happened; tho' it has been performed on all Ages and Temperaments.' The former has certainly not been the Caſe with us in *Europe* nor in *America*; and indeed it would be unaccountable, if it were: For tho' we may admit People in general on the evident Invaſion of Age, and much more in the Progreſs and Advancement of it (ſuppoſing them temperate and regular) to be leſs inflammable Subjects than at the Vigour of Life, and to be rather phlegmatic than bilious; yet we muſt be ſenſible the Circulation is now feebler; the Rigidity of the Veſſels is increaſed, the Arteries having become bony, in ſome old Perſons; the Teguments are dryer; ſome of the minuter Capillaries, which in meer Infancy might not be ſufficiently explained or dilated for the Circulation,

may at this Age as probably be cancelled; and the Perſpiration conſiderably decreaſed. Now as the former Circumſtances will render variolous Extrication and Eruption very difficult; ſo the laſt will occaſion a foul and recrementitious Blood, which might otherwiſe perplex and anomalize the Diſeaſe, it had no direct Tendency, as a *Pabulum*, to exaſperate. Should the Symptoms run high, they will be in the State of Infants or young Children, with Regard to their Strength, without the advantageous Ignorance of their Danger. They will not be ſo liable, as the ſtrongeſt Patients, to a mortal Colluctation with the Operation of the imbibed Venom; tho' probably more ſo, to as fatal a Succumbence under it. But ſuppoſing Eruption got tolerably over, we ſhould be leſs ſurprized at a tardy and imperfect Suppuration, at a ſiliquoſe or verrucoſe Pock, or at that Diſpoſition to a Gangrene, to which old Age is, on other Accounts, ſo obnoxious. And beſides theſe Objections to Inoculation at theſe Times of Life, we may obſerve, which DIEMERBROECK did of the Plague itſelf, that old People are really leſs ſuſceptible of the natural Infection (probably from a Diminution or Dampneſs of the more high and volatile Principles of the Maſs) and that the more advanced have oftener miſſed it by Inoculation, which was early obſerved by Dr. JURIN. We may morally reflect too, that he muſt either have had a very uncommonly uninterrupted Series of earthly Happineſs, who could embrace ſuch an Infection after forty-five or upwards

wards, for a contingent Prolongation of his Life, through an Immunity from one Diſtemper: or that he muſt be affected with an exceſſive Dread at his inevitable Subjection to Death, who could be ſo deeply ſolicitous about a little Remainder of the Day, when Evening admoniſhed him of the neceſſary Approach of Night. Neither might ſuch a Patient, after a ſevere Small Pox (which he has rather Reaſon to expect, even from Inoculation) be able to emerge ſo compleatly thro' all its impairing and morbid Conſequences, as one in any of the former Stages of Life. In *Great Britain* or *Ireland* I have not heard they inoculated Perſons advanced in Life, and of Courſe not the aged. Mr. RANBY, to the beſt of my Recollection, informed me, he inoculated none above two or three and thirty. In *New England* it has been done from fifty to ſixty-ſeven: Women pregnant, and ſoon after Delivery, Grandfires and Grandmothers have been inoculated with their Poſterity: and if there had been any Beldames who deſired it, they might probably have found an Operator. Of forty-two, who took by Inoculation at *Boſton*, out of forty-four, from 30 to 40, one died. Of ſeven, who took out of eight inoculated, from forty to fifty, none. It ſeems leſs ſurprizing that two died out of ſeven inoculated there from fifty to ſixty, than that only one died out of as many inoculated, from ſixty to ſixty-ſeven. Such Temerity muſt have juſtly ſubjected its Authors to that Cenſure of HORACE,

——— *dum vitant vitia, in contraria currunt.*

Thus much, and perhaps but too prolixly, on the Advantages and Diſadvantages of the different Seaſons of Life, for the Small Pox. But as it was our initial Purpoſe to leave nothing very material on this intereſting Subject for any future Compiler, 'till a much larger Experience of the Practice ſhall render it expedient, we are the leſs concerned for any ſuch Redundance, as may have a Chance of being once uſeful. We proceed then to conſider the different Seaſons of the Year in the ſame Relation.

It can ſcarcely be neceſſary to premiſe, that the Seaſons have an obvious Relation to Climate; or that the Summers of *Conſtantinople*, which lies in about 41 N. Latitude, or thoſe of *Charles Town*, which lies in near 33, muſt not only be greatly hotter, but commence earlier and terminate later than a *Britiſh* Summer. TIMONI ſays, 'this Operation is performed either in the Beginning of Winter, or in the Spring.' Yet PYLARINI tells us, 'the *Greek* Operatrix never performed it but in Winter, tho' he takes the Spring alſo to be proper.' The middle of September is ſeldom unſeaſonable here, but the inoculating Hoſpital, I think, rarely operates before October. Some have thought the very cold and rigid Months might be unfavourable for it; yet we find Dr. NETTLETON, whoſe Patients very generally ſucceeded, inoculated in December, January, *&c.* Dr. FULLER's were in April. BOYLSTON begun to inoculate in *New England* the latter End of June 1721, when it muſt be pretty hot

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in the Latitude of forty-two, and continued it to the following May, before which he muſt have experienced it in the Severity of their rigid Winters at *Boſton*. The great Numbers inoculated in *South Carolina* in 1738 were in their raging Summer Months; but this was a Matter of utter Neceſſity. The 300 recorded by Dr. MEAD to have been inoculated in St. *Chriſtopher*'s, in the Latitude of about 17, muſt conſequently have been infected in hot Weather. Theſe laſt are all affirmed to have done well: and indeed from this general curſory View we may well infer, that the great Advantage of Inoculation in all Times and Places looks, as if Providence intended it for an univerſal Relief and Aſſwagement of the natural Malady, whenever, and wherever, it raged. Nevertheleſs, as the State and Temperature of the Air, that Fluid we inceſſantly imbibe, will very probably have ſome Effect on theſe Occaſions; and as we are ſuppoſed to ſelect every availing Circumſtance for communicating the Small Pox, let us reflect a little, what Influence different Seaſons may reaſonably be ſuppoſed to have on it.

Were we to imagine a conſiderable Similarity between the Seaſons of antient *Greece* and ours (which we cannot ſtrictly do) and liſten to what the venerable *Coan* briefly ſays of the former, we muſt conclude the Spring an eligible Seaſon for infuſing the Diſeaſe, as he terms it the (a) moſt healthy one, and particularly for Children

(a) Ἦρ ὑγιεινότατον, καὶ ἥκιστα θανατώδες. L. 3. Aph. 9.

and young People. (a) And indeed we may be ſenſible that our Springs, upon the whole, differ but little, in their general Healthfulneſs, from the *Grecian*. The cutaneous Diſcharge, which the Cold had reſtrained, is now augmenting; the Circulation through the ſuperficial Capillaries is more free; the Blood is probably of a kindly Fluidity and *Craſis* for this Diſeaſe, and the Tegu-ments in no bad Diſpoſition; eſpecially if we ſuppoſe a ſettled Spring, and rather blandly tepid than raw or nipping; tho' in ſome Habits and Circumſtances the latter Temperature may not interdict it. The very Aſpect of the Seaſon, and the benign light Exhalations from the teeming Earth, may conduce to Health, and increaſe the nervous *Pabulum* and Secretion; as I have ſometimes imagined all very delightful Proſpects, all entertaining Employment, and rational Pleaſures do. The Poets and Naturaliſts of all Climates, that enjoy a very diſtinct Spring, have not been wanting in their Eulogies of the Salubrity and Pleaſure of this Morning of the Year, as we may term it. There is no præternatural Fervour as yet imbibed by the Summer's Heat; the Bile is not greatly augmented, nor turgeſcent; there is little Tendency to Putrefaction; nor are the Solids as denſe and renitent as in ſevere Winters. Undoubtedly, on the whole, the Spring is far from being improper for Inoculation. The Hoſ-

pital

(a) Τὰ μὲν ὑπὸ τὰ ἄκρα τὰ θέρεος, οἱ παῖδες, καὶ οἱ τετεῶν ἐχόμενοι τῇσιν ἡλικιῇσιν ἀρίσταξε Διαγνῶσι, καὶ ὑγιαίνεσι μάλισα.
L. 3. Aph. 18.

pital conſtituted ſolely for it ordinarily receives Subjects the latter End of March, and early in April. Beſides, ſhould the Patients be viſited with a greater Eruption or higher Symptoms than uſually attend it, the mild Advances of our pleaſant Summer ſucceed very opportunely to air, recreate and recruit them.

Yet as nothing is perfect and unmixed, we muſt obſerve, that this Seaſon, like the reſt, has its Propenſity to the Production of particular Diſorders. In enumerating thoſe peculiar to the Spring, HIPPOCRATES (1) ſpecifies very many of the cutaneous Diſorders of his Country-men, which are more than we have meer *Engliſh* Names for, a ſufficient Proof of their not being ſo familiar to this Climate; whoſe Spring muſt be more temperate than theirs, which probably riſes to the Heat of our ordinary Summers. It muſt be acknowleged however, that ſuch infebrile Eruptions as happen here occur more frequently in the Spring than at other Seaſons. Now whether this is ſolely owing to the Attenuation and Expulſion of any acrid and noxious Particles, which the Winter's Cold had locked up in the Maſs; and which may be particularly accumulated in that Seaſon, from our ſmaller Proportion of vegetable Food then, and a more than uſual Quantity of baked and high ſeaſoned Meats: or whether it depends only on a greater Expanſion of the Blood and Relaxation of the Teguments by the returning Warmth, it evinces the Diſpoſition of this Sea-

(a) L. 3. Aph. 20.

ſon to eruptive Diſeaſes; that is, to ſuch as depend on a more diffuſive Motion from the Centre to the Superficies, with a greater Excretion there. This will give us but little Apprehenſion of internal Eruption then, if we may be allowed the Expreſſion, which muſt be defenſible, as the *Viſcera* have their exterior Surface too. But the Queſtion here is, whether, from the preſent Tendency of various Eruptions to the Surface of the Body, a more copious and leſs ſimple Eruption may not occur in the Small Pox, more particularly in the Spring? A late chirurgical Writer on Inoculation is fond of ſuppoſing a particular Malignity in the Small Pox at this Seaſon: and it is not improbable that when all the Fluids in our Hemiſphere are rarefied and excited, in order to vegetable Generation, our vital Fluids may become gradually more diſpoſed to a Motion very analogous to Fermentation. But we ſhould not omit to add here, that this gradual Attenuation of the Maſs, and its freer Diffuſion is in general manifeſtly benign and ſalutary, diſpoſing many Animals to a Renovation of their Kind, with that of their Food. Beſides the Matter of thoſe little Eruptions that occur at this Seaſon, and chiefly in Children, can have no conſiderable Malignity, as it occaſioned little febrile Commotion or ſenſible Complaint by its Commixture with the Blood before its actual Eruption; which having a Tendency to defæcate the Maſs, poſſibly even a judicious Uſe might be made of it, previous to Inoculation. Serjeant RANBY expreſsly

preſsly ſays, that ſlight Eruptions on the Face or Body never deterred him from inoculating; nor did he ever experience any Aggravation of the enſuing Diſeaſe from them: and upon the whole we think it very clear, that the Advantages of this Seaſon for the Operation ſenſibly out-weigh its Inconveniences, which reiterated Experience has verified: and with which, a malignant Species of the Small Pox for two or three Springs, if it could be proved, inſtead of being mentioned, would not equiponderate.

Summer ſeems unanimouſly rejected for this Operation by all Writers, and certainly, in the main, with great Juſtice; ſince the ſame Intemperature, moſt generally obſerved to exalt the Virofity of the natural Diſeaſe, muſt have an obvious Tendency to raiſe the Symptoms of that, which is excited by a different Application of the ſame contagious Cauſe, and which is ſo genuine, tho' a very ſoft Reſemblance of it in Miniature. Every medical Perſon, who has endured the Fervours of Summers equal to the *Grecian*, muſt have ſeen, in their burning, their bilious Fevers, their *Choleras*, and their bloody Fluxes, too many mortal Exemplifications of the καυσοι, ἐμετοι, διαῤῥοιαι, which HIPPOCRATES (1) conſiders as the proper Diſeaſes of this Seaſon; his ἱδρωα alſo correſponding very cloſely to their prickly Heat. HEURNIUS, who lived in *Holland*, aſſerts, on this Aphoriſm, (a) ' that Summer produces a great

(1) L. 3. Aph. 21. (a) Aeſtas acerrimae bilis procreatrix eſt.——In locum modò citatum.

great Acridity of the Bile.' His Expreſſion is rather ſtronger, ſignifying its Procreation of the moſt acrid. BOERHAAVE alſo tells us, (1) 'that Summer, and whatever increaſes the Velocity of the Blood, wonderfully encreaſes and exalts bilious acrid Salts'; and, in talking of the Small Pox, terms them, in the Height of a *Dutch* Summer, *periculoſiſſimae*, moſt highly dangerous. In Fact the nine who died, out of 900 inoculated in *Carolina*, all died in their very hot Summer Months. In *Britain* we hear very little of its being enterprized at this Term. The celebrated *Sydenham*'s Remarks on the natural Diſeaſe, and thoſe of many other eminent Writers, all tend to the ſame Purpoſe. Neither muſt we omit ſo material an Argument againſt it, as that of this Seaſon's particular Tendency to promote Putrefaction; to which it may be added, that Summer, in ſome Conſtitutions, may require a pretty accurate Preparation, for which it is not the beſt Time.

But having rendered this juſt Deference to theſe Facts, Arguments and Authorities, let us not be partially unattentive, to Facts at leaſt, on the other Hand. Of twenty-two which BOYLSTON inoculated at *Boſton*, between June twenty-ſixth and Auguſt thirtieth, one died, who was inoculated the laſt Day. If it be conſidered, that but one died out of each hundred inoculated in *Carolina*, all indeed in June, July, and Auguſt, when I have obſerved the natural Diſtemper, at the

(1) De medicam. Oper.

the very leaſt, carried off every fifth Patient; and if we admit the raging Heat of thoſe Months there to be, as it very probably was, a moſt aggravating Circumſtance, it muſt have demonſtrated the great comparative Security of Inoculation, even in Summer there. The 300 Negroes inoculated in St. *Chriſtopher*'s, under an inceſſant Summer, cannot well be urged as an Objection to it then; tho' perhaps as they were all *Africans* or their Deſcendants, the Heat was not ſo deterring a Circumſtance in them, as it might be in Whites or Europeans. Indeed were it not for ſuch Succeſs in ſuch Climates, all thoſe very near, and within, the *Tropics*, where its Relief is likely to be very neceſſary, would be interdicted the Uſe of it: and as this violent Diſeaſe was not improbably at firſt an endemic or aboriginal of *Africa*, it were hard to ſuppoſe, that Providence had rendered it, from that Privation of Cold, which its Name imports, incapable of the greateſt Security from the mortal Degrees of it. Theſe Conſiderations will at leaſt hint, that our Summer may not be the moſt improper Seaſon for inoculating *Africans* here; the natural *Craſis* of whoſe Fluids undoubtedly better adapts them to bear, and even thrive in, Heat, than ours; eſpecially if their Colour abſorbs Heat, as it has been ſuppoſed to do Light. And poſſibly if any Perſon of our own Complexion, of a moiſt or phlegmatic Conſtitution, and approaching the Winter of Life, was determined to be inoculated, he might prove ſuch a reaſonable Exception to

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the general Deteriority of our Summer for the Operation, as to render it judiciouſly preferable; eſpecially if it was, in general, his moſt healthy Time. Neither is this Seaſon altogether void of ſome favourable Circumſtances for this Diſtemper, ſuch as the augmented Perſpiration, and laxer State of the Teguments in it: to which it may be added, that not a few of our Summers have been too moderate for the compleat Maturation and Sapour of our Fruits; and that in certain Fact the natural Diſeaſe has been, not very ſeldom, found more benign at this Seaſon than in ſome Winters with us. Yet as our cooleſt Summers muſt have a leſs ſimple, and elaſtic Air, from ſome Exhalations, its Inconveniences will generally preponderate; and it muſt be particularly pernicious to bilious, hot and dry Temperaments, to contract the Small Pox in it. The Summer then, even our own, ſeems juſtly to be rejected, in moſt Caſes and general Situations, for the Operation: though, where the natural Diſeaſe was very epidemic, and unuſually fatal then, ſuch reflecting Subjects of it, as could not retreat from the Scene of Infection, will not form to themſelves the leaſt cogent Arguments, for admitting, at ſo perilous a Juncture, the leaſt perilous Mode of it. The Conſequence from a *Carolina* Summer is no bad Precedent. Neither muſt we omit here, that the Climates and Summers, Strangers have been habituated to, may well deſerve our Conſideration on this Head. Thus ſeveral Children from *South Carolina* were

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very ſucceſsfully inoculated here laſt May; and I inoculated one as late as June the 1ſt. N. S. or May the 20th O. S. whom indeed I ſuppoſed and found a very mild Subject for the Diſtemper: I ſhould have been leſs diſpoſed to it at that Seaſon on a Native here.

The Italian Phyſicians, who obliged us with the earlieſt Informations of this Practice, are as ſilent about the Uſe of it in Autumn, as in Summer; tho' its Interdiction is ſufficiently implied in one's confining it, with the *Greek* Woman, entirely to the Winter, and the others limiting it to Winter and Spring. The Summers at *Conſtantinople* being much hotter and more extended than our own; from the great Attrition and Expence of their Humours then, it muſt follow, that their Autumns, which cannot greatly differ from the (a) *Hippocratic*, muſt be ſicklier than the *Britiſh*. And it happens indeed pretty conſtantly, that the Inhabitants of *Carolina* are more healthy during the equable, tho' ſevere, Heats of their three violent Summer Months, than upon their ſenſible Abatement. For if the (b) Changes of the Seaſons, as that great Obſerver notes, are a principal Source of Diſeaſes, it muſt conſiderably depend on their varying the Excretions, particularly that important one of Perſpiration, which is certainly much greater at *Conſtantinople* than here,

(a) Ἐν Φθινοπορῳ ὀξυτατοι αἱ νοσοι, καὶ θανατωδεσταται, ὡς ἔπος εἰπειν. L. 3. Aph. 9.

(b) Αἱ μεταβολοι τῶν ὡρεων μαλιστα τικτουσι νοσηματα. L. 3. Aph. 1.

here; and conſequently ſubject to a greater, that is, a more morbid, Variation. But if we ſuppoſe Autumn to commence here rather before the middle of September, according to our lately rectified Style, Experience has convinced us it is a very proper Seaſon for Inoculation, notwithſtanding its being unhealthy for many addicted to chronically periodical Diſeaſes. An eminent Phyſician, whom I had Occaſion to converſe with on this Diſeaſe, ſaid, he imagined the Fall a good Seaſon for the Operation, from our Humours having been previouſly cooled and diluted by the Summer Fruits. This appears not unreaſonable; and we may gratefully obſerve, by the Way, the abundant Goodneſs of the omnipotent Phyſician, in preſenting us, at that Noon of the Year, with Plenty and Variety of ſuch Regales as attemper the Blood, and correct the Bile in its moſt turgeſcent State; and in ſhowering down a Profuſion of the moſt acid and cooling Fruits, where it abounds moſt, and where there is the greateſt Tendency to Putrefaction from Heat. As the Operation here is almoſt wholly confined to Spring and Fall, its few Miſcarriages muſt have occurred at thoſe Seaſons; and they may, without any material Error, be equally divided between them. After the firſt Patient BOYLSTON loſt, which was in Auguſt, none of the other five died, 'till very late in November, when their Winter may be reckoned ſet in.

The firſt Inoculators ſelected Winter ſolely for the Operation, and if we conſider the Climate and

Air

Air of *Conſtantinople*, that Seaſon, when they are generally the freeſt from peſtilential Diſeaſes, promiſes to conſtitute the beſt Temperature for it there. But the Queſtion is, whether it is ſo in our own, or in ſtill more northern Regions, where the Cold is very rigid, and ſometimes extreme. The moſt favourable Quality of Cold, with Regard to this Diſeaſe, ſeems to be its Oppoſition to that Putridity of the Humours, which often attends the ſevereſt Degrees of it: its moſt unfavourable one is, that it is apt to render the Veſſels, Ducts and Teguments too rigid, and the Blood itſelf, perhaps, too compact, from which laſt Circumſtance a greater internal Conflict and Fever may enſue, as a more difficult Eruption may reſult from the firſt. And tho' a very gradual Eruption, after Infection, would be deſirable, where we had Reaſon to ſuppoſe it the Effect of a very moderate Aſſimilation: yet if the Humours conſiderably variolated are retained much beyond the ordinary Term of a ſalutary Eruption, by a Straitneſs or Rigidity of the Canals, thro' which they ſhould be wafted to the Surface, a Tranſlation of it may be determined on ſome internal and leſs renitent Part. But here it is obvious that Inoculation, which takes off the Reſiſtance of the inoculated Limb or Limbs, and makes their Ulcers attractive of that Poiſon whoſe Seeds were infuſed through them, has a great Advantage of the natural Diſeaſe in this as well as other Seaſons. With Regard to our own Winters it muſt be acknowleged, that for ſeveral late ones

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more have died of the natural Diſeaſe than in the preceding or ſubſequent Summers. Whether this may be aſcribed to a greater Number of Perſons (among whom are many freſh Subjects for it) reſiding in *London* during Winter; whether the Check of Perſpiration, the more foggy and ſulphurous Air, ſome Alteration of Diet during the Seaſon, or whatever elſe may cauſe, or conduce to it, our Bills have demonſtrated the Fact abundantly. If ſuch a remarkable Mortality, repeated again in the ſame Seaſon, ſhould induce People to be inoculated in it (as a great Mortality muſt be a very natural Incentive) we muſt grant that it will be more practicable to defend a proper Chamber from all ſevere Cold, than it will be to render the Air of one, in a very ſultry Summer, conſiderably cooler than the contiguous Parts of the Atmoſphere. I ſhould think extreme cold Weather improper for the Operation in moſt Bodies, and particularly in tenſe and rigid Subjects, and ſuch as ſweated with Difficulty. It might ſucceed better with the very bilious, and with thoſe full ſoft Habits, in which we might apprehend ſome putrid and colliquative Symptoms, from a Summer Infection.

We ſhall endeavour to be the more conciſe on the moſt and leaſt favourable Complexions and Temperaments for this Diſeaſe (the former being ſuppoſed conſiderably indicative of the latter) ſince much of this has been occaſionally inſinuated and interſperſed in ſome of the former Sections. Beſides which, the Temperaments, or

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the Humours, which greatly conſtitute them, have no inſignificant Relation to the different Stages of Life, and Seaſons of the Year, which have been already conſidered. Thus meer Children compared, not with each other, but with the Generality of thoſe at other Stages, are rarely bilious; meer Youth is rarely phlegmatic, or old Age very ſanguine. And thus, in the Spring, the roſy Blood ſeems gently expanded; in Summer the Bile abounds, and in Autumn and Winter Phlegm and Rheum. But when we come to conſider Individuals, abſtracted from the different Stages of Life, and Seaſons of the Year, undoubtedly thoſe in the ſame Stage differ, and even in the ſame Seaſon, greatly, in Temperament. I have imagined, in general, that the Complexions which exhibited a ſoft damaſk-like Roſineſs in the Countenance, with a mild, unardent Vividneſs of the Eyes and Aſpect, were the moſt happily diſpoſed for this Diſeaſe. This ſeems to promiſe a full Proportion of a fine, ſimple Lymph, for a favourable Dilution of the inflammable red Globules. Some Drops of a rich, bright, crimſon Tincture, inſtilled into a Quantity of pure, diaphanous, elemental Water, that might not affect the tinging Body by any mineral, or metallic Addition, may give us ſome Idea of ſuch an Appearance; however ſhort of the inimitably mild and corrected Glow, which animating Nature ſoftly diffuſes, in this temperate Climate, over the Countenance of many of the gentler Sex. It ſhould ſeem, in theſe fine Archetypes, as if the

Bile were perfectly ſecreted by its proper Organs; the *Rete mucoſum* nearly colourleſs, and its Envelopements again delicate, ſmooth and clear. And yet we had a late Inſtance, that an Exception may occur to the entire Succeſs of this happieſt Complexion for the Small Pox, in the ſecond Daughter of the late brave and worthy Sir PETER WARREN; which young Lady, under this very promiſing Appearance, and at about the Age of ſix, took a ſevere Quantity of it, from which ſhe recovered, not without Difficulty; and which left too many Traces of its Triumphs behind it. But we muſt not omit, that ſhe had heated herſelf greatly in *Kenſington* Gardens before Seizure; and was ſurprized by the Sight of one newly recovered from the Diſeaſe. Miſs WARREN, who has that Complexion we have attempted to deſcribe, had before been inoculated by Serjeant HAWKINS, and has ſcarcely a perceivable Veſtige of the Diſeaſe.

Thoſe who have Fluſh enough to be termed ruddy or ſanguine, if not too deep, and moderately clear, frequently ſucceed well when young, in the natural Way; notwithſtanding they generally aſſimilate more than the former, as it is not unuſual to ſee conſiderable Traces of this Diſeaſe in wholeſome ruddy Faces. But the Time of Life when ſuch were ſeized, the Climate and Seaſon of the Year, their Way of Living and Exerciſe, juſt previous to Contagion, and the Denſity of their Teguments, which muſt be eroded through by the Puſtules, are to

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be conſidered in the Eſtimate. Such, however, generally come off very well by Inoculation. Great Care ſhould be taken not to heat their Blood any Way previous to it. About the Time of ſickening, if not advanced in adult Life, they are generally inclinable to Hæmorrhages from the Noſe, which have much oftner a good Effect than the contrary: nevertheleſs it ſufficiently contraindicates the Uſe of Poſſet Drinks, or Milk, even tho' diluted.

But where the Redneſs ſhould be ſo intenſe, as to verge towards a Shade of Purple in the Face; and to protrude in rough Pimples and a ſort of Excreſcences (which occur oftneſt in adult intemperate Perſons) we ſhould apprehend a ſevere Diſeaſe. Their Blood is manifeſtly pregnant with rich and ſulphureous Parts, and ſuch aſcending much more into the Face, than they appear on the Trunk or Extremities, apparently depends on the ſame *Rationale* * with the Eruption of the earlieſt and moſt corroding Puſtules there.

The bilious Temperament, that betrays itſelf in a Flaveſcence of the Face and Teguments, and an unclear White of the Eye, threatens a very bad Diſpoſition for it. And tho' the *atra Bilis* of the Antients, and of ſome antient Moderns, affords me no preciſe Idea; yet where I have obſerved this Colour ſtill more brown and intenſe (ſuppoſing the Effects of Climate and Inſolation out of the Queſtion) with a certain concomitant Heavineſs of Aſpect, a dry Habit, and

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* See P. 154.

harſh Voice, I have dreaded even the Inoculation of the Subject; and would have all, ſo unhappily conſtituted for it, to retire, if poſſible, beyond the Activity of Infection, or their own Attraction of it. The Pale, if clear, may be conſidered, in ſome Reſpect, as contraſted to the Bilious; and where it is not morbid, but natural, and as it were hereditary, and may reaſonably be ſuppoſed to depend on ſuch a mild and copious Humidity of the Conſtitution (from a ſmaller Proportion of the *Craſſamentum*) as is often accompanied with a ſupple Fibre, they may not be very unpromiſing Subjects for the Diſeaſe, and are ſometimes more diſpoſed to ſlow and nervous, than very inflammatory Symptoms. But where the Paleneſs was indicative of a Cacochymy or Leucophlegmacy, and tinged the Countenance with a Shade of the *Chlorœſis*, though that Diſtemper did not exiſt, we may be likely to experience a perverſe Diſeaſe. For tho' we do not conſider the Lymph in this State, nor even the Phlegm, which may be an Incraſſation of it, as the proper *Nidus* or Harbinger of the Small Pox; yet, as it is morbid, there may be ſome Doubt, whether, as morbid, it might not exaſperate the Diſeaſe, which it will very probably perplex. And this may be the Caſe of many of thoſe pale Complexions we obſerve often ſeverely pitted after the Small Pox.

We ſhall conclude this Section, by enquiring, what different morbid Diſpoſitions ſhould more or leſs diſcourage us from the Practice of Inoculation

lation on Perſons affected by, or propenſe to, them: an Enquiry we ſhould probably have declined, had there not been a few Inſtances of People who have been permitted, and even incouraged, to ſubmit to Inoculation, for other Purpoſes, than that of introducing the Diſeaſe gently; which we cannot avoid condemning very generally, and which did not take its Riſe in *Europe*. But after a very hearty Averment of our Opinion, that the morbid, the very infirm and valetudinary, as ſuch, are improper Subjects for this Operation, it will be but impartial to diſtinguiſh, that ſome particular Indiſpoſitions are more ſtrongly interdictive of it than others. We have never heard, and cannot ſuppoſe, any have been abſurd enough to recommend this Infection for a Remedy againſt any acute, contagious, or febrile Diſorder; but rather for the Removal or Mitigation of ſome chronical or periodical Complaint. The Scrophulous then, if of a very hot Intemperies (for I have ſeen them oppoſitely circumſtanced) are very indifferent Subjects for the natural Diſeaſe, and prove difficult, in Proportion, for Inoculation; tho' having emerged, I have really ſeen a ſenſible Improvement of their Conſtitutions. Of both this Difficulty and this Improvement I had a Conviction in the Caſe of a Youth, from *America*, about two Years paſt: and whom, to my Reproach I confeſs, I did not apprehend to have been ſuch a Subject, 'till in his Decumbiture from Inoculation; as the young Gentleman appeared

very vegete, and free from any glandular Foulneſs, after a Reſidence of ſeveral Months in *London* (where it appeared his Health had greatly improved) whence I concluded he had been recommended, merely for Education, to the Care of a worthy and eminent Merchant here. This Gentleman however has ſince informed me, that upon the Youth's Embarkation from *Carolina*, he was ſo extremely ill and low, that his Friends never expected to hear of his living Arrival in *England*. The Youth himſelf aſſured me, in his Confinement, he had been given over more than once by Practitioners abroad; and was once actually laid out for dead: that he was ſick and feveriſh generally ſix Months in the Year; and at other Times had running Ears, and Breakings out; ſcarcely ever ſweating (tho' naturally very active when not ill) throughout their fervent Summers, when very great Heat muſt be imbibed; and from whence the Inaction of the *vaſa exhalantia* is likely to be an extreme morbific Circumſtance. But without any previous Information of his bad Situation there, he was purged here three or four Times, tho' without the leaſt Regard to a ſcrophulous or hectic Habit; and gentle Phyſic operated very copiouſly with him. Neither is it ſtrange that he ſhould be eaſily ſtimulated to the inferior Evacuations, where the ſuperficial one was ſo ſmall; his Teguments, for the Age of near fourteen, being uncommonly thick and ſtrong, the Puſtules having been unable to protrude to the leaſt Prominence

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in the Soles of his Feet, and but to very little in the Palms of his Hands. His Complexion was very brown. He could not be ſaid to ſicken nevertheleſs before the latter End of the ſeventh Day, when he complained of a very general Itching and Tingling, a frequent Token of copious Aſſimilation. His firſt Eruption was on the eighth, and proceeded to a very full Crop, which, upon the whole, might be called diſtinct, tho' it actually cohered in ſeveral Spots on the Face. Yet I can truly aver, I never ſaw ſo large a Quantity of the Diſeaſe with ſuch mild Symptoms, ſcarcely a Moment's Delirium or Vomiting, and no ſenſible ſecondary Fever, his chief Complaint being great external Soreneſs. He had great Spirits and Patience, for his Load of the Diſeaſe: and after he was up, the ſcrophulous Habitude began to diſcover itſelf in different Boils and Tumours, but chiefly in ſome about the Neck and parotid Glands. But they all healed ſoon after opening and repeated Purging: he ſweats freely now thro' his altered Surface, is hale and lively, and I really think a much fitter Subject for his native Country than when he left it. I very ſeriouſly apprehend he could ſcarcely have ſurvived an internal Infection; which muſt have diſpoſed one with ſuch a Stock of morbid and variolous *Pabulum*, and ſuch a Surface, to high internal and inflammatory Symptoms. His only Brother died before at *Briſtol* of the natural Diſeaſe.

The Digreſſion of this Caſe, which does Inoculation ſo much Honour, and myſelf ſo little, will be pardoned, perhaps, for the Illuſtration it may afford, and the Caution I hope it will recommend to others, of not acquieſcing ſo ſuperficially, as I did here, to preſent Appearances. Indeed I have indulged myſelf the more in this Communication, as any ſimilar Acknowlegement, from a Name of Conſequence, might tend to revive a very uſeful old Cuſtom, which ſeems aboliſhed by moſt practical Writers; and which is, that, inſtead of promulging their Succeſſes only, which generally publiſh themſelves, and in which publiſhing every Empiric can fully equal them, they would farther illuminate us with their Miſcarriages and Miſtakes alſo. Now as HIPPOCRATES and SYDENHAM have made, and repeated, the Precedent of atteſting their proper Fallibility, which every Quack deteſts to copy, an Imitation of it may be doubly reconcileable with the Dignity of a Phyſician, and would entirely comport with that of a Philoſopher. But if the Dread of leſs Fame or Money ſhould deter Gentlemen of extenſive Opportunities in Practice, from obliging Mankind with ſuch valuable *Deſiderata*, during their Lives, a private Memorandum faithfully kept (if that would not coſt too much Time) and annexed to their laſt Wills, might entitle a Multitude of their Survivors to valuable Legacies.—But to return from theſe *ſeria mixta jocis*:—

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All eruptive and cutaneous Diſorders, that deſerve the Name of a Diſeaſe, in general ſeem to conſtitute a State improper for this Operation. Thus Dr. JURIN annexes, to the Account of Miſs WALLER's Death, who was inoculated in *October* 1723, and died the eighteenth from the Operation, the Atteſtation of her Father, that ſhe was leprous. Thus Miſs ACOURT of four Years old, inoculated September 1723, who died the twenty-ſecond from the Inciſions, is atteſted to have been ſubject, in her Infancy, to an Ophthalmy in both Eyes; and, as ſhe advanced, to a Humour that made her raw from Ear to Ear, which abated on purging and cutting an Iſſue, but ſtill broke out again Spring and Fall. She had ſome of theſe Excoriations three Weeks before the Operation, but her Iſſue was ſuffered to dry by the Nurſe's Neglect, which muſt have been a bad Circumſtance; ſince we may preſume of eruptive Matter, *qua data porta ruet.*

All inflamed or ulcerated *Viſcera* muſt certainly contraindicate Inoculation; ſince we may too juſtly apprehend a topical Exaſperation there from the Diſeaſe. A Jaundice and all hepatic Diſorders ſhould particularly deter us from it. Miſs ROLT aged between nine and ten, who was inoculated September 1723, and died nine Weeks after it, had a Jaundice of ſix Months Duration the Year before, which appeared again the following Spring, but was cured before the Operation. All inveterate Ulcers, whoſe Obſtinacy is founded on a morbid Dyſcraſy of the Humours, indicate the

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effectual Cure of ſuch Dyſcraſy, before Inoculation. Hot and hectical Habits muſt prove bad Receptacles of this inflammatory *Virus*, while they continue ſuch. The Scorbutic, but particularly if of a hot Temperament, muſt be improper: and all venereal Complaints, if we except a meer Gleet from Relaxation, without Virulence, ſhould be removed previous to Inoculation, the moſt judicious Cure of which may prove no bad Preparation for it, if the Strength has not been too conſiderably depreſſed by the Evacuations. And even notwithſtanding that extraordinary one by Salivation, Dr. MEAD affirms (1) he has ſeen many in an Hoſpital ſo exhauſted by it for the Great Pox, that they were reduced almoſt to Sceletons, and yet all went very eaſily through the Small.

The Diſorders that appear not ſo formidable for the Admiſſion of this Practice are ſuch, as depend on an over-moiſt Habit and lax Fibres. Thus it is not inconceivable, that a ſlight recent Catarrh from a little Check of Perſpiration, and ſome cold Defluxions on the Joints (ſuppoſing the *Viſcera* entirely unaffected) might be even diverted, by the Counter-tendency of this Diſeaſe to the Surface; and by the augmented Perſpiration it may afterwards contribute to. Incipient *Oedemas* of the lower Extremities (ſuppoſing them not the Effects of any Rupture in the Lymphatics, nor one of the laſt Symptoms in ſome fatal chronical Diſorders) but the Reſult of a languid Circulation, a cold and pituitous Maſs, or lax

(1) De Variol. P. 71.

lax Fibres, might be rather corrected by it. There appears to be a certain Incompatibility in ſome Diſeaſes, which renders it difficult to conceive their poſſible Exiſtence, at the ſame Time, in the ſame Subject. Thus BOERHAAVE, I think, ſomewhere tells us, that if we could introduce a Quartan, we ſhould expel the Gout by it: and perhaps a late Recovery from ſuch a moderate Intermittent as had left no Infarctions of the *Viſcera* behind it, might conſtitute a Temperament, that would not violently co-operate with the variolous Infection. I mention this the rather, as I have certainly known Adults paſs thro' the Small Pox very favourably, ſoon after the former. In brief, the Diſorders from a cold and humid Intemperies would by no Means deter me equally from this Mode of Infection, with thoſe from the oppoſite one. Whence it ſhould ſeem, as if Dr. WILLIS's Obſervation, 'that the variolous Poiſon does not act on the vital Humours like Yeaſt on fermentable Liquors, by depurating them, but leaves them rather fouler than it found them,' ſhould be limited to a hot Intemperies of the Blood and Habit, and reſtrained from the contrary one; which can ſcarcely ever be increaſed, and has been corrected, by it. We repeat, at the ſame Time, that we are by no Means preſcribing Inoculation to any that may be called ſick or ailing; which we have already cenſured as raſh and injudicious, and ſometimes it ſeems to have been enterprized with equal Ignorance and Perverſeneſs. Nevertheleſs, in a profeſſed

feſſed Analyſis of the Subject, it might have been judged a material Defect to have omitted the different Habits and Circumſtances, that might more or leſs either diſpoſe us to, or deter us from, the Application of it: and more particularly, as this Part has ſome neceſſary previous Relation to the Preparation of different Conſtitutions for this Diſeaſe, and for the Operation introductive of it, to which we now directly proceed.

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SECTION IX.

Of Preparation previous to Inoculation.

THE Title of this Section may appear, at firſt View, to include an Impropriety, in placing it thus ſubſequently to ſome others, and particularly to that of the Operation, which the Subject of this is premiſed to. But as it ſeemed proper to evince the comparative Advantages of Inoculation, in order to a chearful Admiſſion of it; to ſpecify the fitteſt Seaſons of Life and of the Year; and to diſtinguiſh the moſt promiſing and diſcouraging Subjects of it, before we entered on Preparation, which, it is conceived, muſt be judiciouſly varied, in Reſpect of ſuch different Circumſtances, we think it may ſucceed ſuch previous Diſquiſitions conſequentially enough.

Some Perſons have repoſed ſuch an entire Confidence in this Infection, by Inciſion, as to deny the Neceſſity, or even Uſefulneſs, of any Method preparatory to it; whence it may be preſumed ſeveral have been inoculated with little or none, a great Majority of whom have certainly done well. And indeed, to be impartial, as the natural

tural Infection is generally received unconſciouſly, where we can ſeldom ſuppoſe any preparatory Precaution, there is no Doubt but the meer Circumſtance of admitting the Contagion by one or more Inciſions on the Extremities, inſtead of referring the Manner of its Acceſs to Chance, will be attended with conſiderable Advantages in many Inſtances; ſuppoſing the Inoculated to have ſubmitted to no other Precaution, than that of living temperately, and having carefully avoided natural Infection. On the other Hand it ſeems but reaſonable to enquire, whether there may not be certain Means of extending theſe Advantages to a ſtill greater Number, and to a more certain Degree of Security in particular Conſtitutions and Circumſtances. And if the Affirmative of this ſhould appear highly probable, it will be ridiculous to deliberate, whether we ſhould avail ourſelves of this greater Security on ſo intereſting, ſo vital, a Point. Now that different Bodies are differently diſpoſed for the Reception and Iſſue of this Diſeaſe: that the ſame Bodies are variouſly diſpoſed for it at different Times, and under different Circumſtances: and that a judicious Exertion of medical Knowlege may remove ſome unpromiſing Appearances for it in different Conſtitutions; and frequently mitigate, at leaſt, very alarming ones, are Propoſitions that muſt appear to reſolve themſelves affirmatively at once, to every unprejudiced Reflector. Some of the Objectors to Preparation may poſſibly have commenced ſuch, from the ſupercilious and over-laboured

boured Formality of ſome Phyſicians in the Regulation of it: and doubtleſs there may have been Errors committed on this Occaſion, both from our dignified Ignorance, and our operoſe Endeavours to conceal it; which we ſometimes may too effectually do, even from ourſelves: ſo that where a Subject ſhould require a more exquiſite Preparation than general Temperance and a little opening Phyſic, or Bleeding, from a manifeſt ſanguine *Plethora*, the reſt had better be ſubmitted to the Oeconomy of Nature, than to the Conduct of a weak Head, of whatever medical Claſs or Appellation. But having admitted this, may it not be ſuggeſted, with equal Probability, that others have ſlighted Preparation, from a Conſciouſneſs, that where a very appropriate one was really neceſſary in particular Caſes and Situations, their Qualifications for it were but moderate?

If we recur to the great RHAZES, our firſt Author on this Diſeaſe, for a *Latin* Tranſlation of whom the World is much obliged to the good Offices of Dr. MEAD, we ſhall find his Chapter, Of Preſervation from the Small Pox, to exhibit a very juſt and rational Idea of it; as the greateſt Part of his very cooling prophylactic Method would be an excellent Preparation for it, in a hot bilious Temperament, in Summer. TIMONI ſays, 'the Patient to be inoculated is to take Care of his Diet; and that the Cuſtom at *Conſtantinople* is to abſtain entirely from Fleſh and Broth for twenty or twenty-five Days.'

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PYLARINI informs us, 'the *Grecian* Inoculatrix enjoined a good *Regimen* as to the ſix Non-naturals, eſpecially Diet; for ſhe ſtrictly forbad not only the Uſe of Wine and Meat, but alſo of its Broth for forty Days.' He adds, 'it has very often proved fatal to ſuch Patients, as did not follow this Direction; for new Puſtules have been obſerved to break out, and other dangerous Symptoms to ariſe.' This greater Accuracy, on this important Point, was moſt prudently inculcated by this judicious Phyſician: and we may ſafely affirm, it has been generally obſerved by our moſt rational Conductors of Inoculation in *Europe*. Neither can we heſitate, on the Subject of Preparation, to have a principal Regard to the dietetic one.

The Alterations effected in our Fluids and Solids by our Diet are gradual, and without that Violence to the Conſtitution, which it ſometimes ſuffers from the Operation of very efficacious Medicines: For tho' the Aſſertion may ſeem novel, it is certain, that all Things we take internally, which are indigeſtible and unaſſimilable by us, are Poiſons, in ſome Degree; and prove Remedies but by Accident, in Conſequence of their evacuating ſome Humour, correcting ſome Dyſcraſy, or removing ſome Obſtruction, more chronically and importantly morbific than their own Subſtance and Operation, which are ſenſibly ſo for a ſhort Time. This Diſtinction appears reconcileable enough with the Reaſon of that Apho-

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riſm that ſays, (a) 'If the morbific Humours be evacuated, [ſuppoſing them concocted too] the Patient is relieved, and bears the Evacuation well, otherwiſe not.' Whence Evacuations are generally contraindicated where there are not ſuch Humours; except a dangerous Plenitude even of good ones, in certain Habits and Circumſtances, ſhould render them precautionary and diſcreet, according to a former Precept. (1) But as a Body without morbific Humours, abſtracted from this Diſeaſe, and without ſuch a Plenitude, may be of a very ſuſpicious Habit with Regard to the Reception of the variolous *Virus*; that a Courſe of ſuch Aliment as is productive of a different Chyle (with a correſponding Diverſity in its ſubſequent Commixtions, Appoſitions and Secretions) may often commute, or mitigate, ſuch Habit, is reaſonable, and verified by Experience. I can have little Doubt myſelf, but that the general Way of living, in any Country, co-operates with the Climate and Situation to compound, and evidently to mark, what may be called, the national Conſtitution and Temperament; whatever Subdiverſities may obtain in many of their Individuals: tho' I conceive the very ſame kind of Aliment to be elaborated, by one Conſtitution, into Blood of a ſomewhat different *Craſis* and Compoſition, from what it would be in others. Nevertheleſs, as a different, and oppoſite, Diet would occaſion,

(a) Ἢν οἷα δεῖ καθαιρεῖν καθαίρωνται, ξυμφέρει, τε καὶ ἀφορέειν φέρουσι· τὰ δ' ἐναντία, δυσχερέα. L. 1. Aph. 25.

(1) See L. 1. Aph. 3.

under the Action of the ſame Organs, a greater Diverſity of the Blood, than would reſult from a ſtrict Similarity of Diet under different human Organizations, that Courſe of it, that is anti-phlogiſtic and reſtrictive of Fermentation in one Body, will be, tho' probably in different Degrees, ſo in all; abſtracted from a few Sympathies or Diſagreements in Food, which are rare, and out of the Queſtion. Could we as exactly foretell any other acute Diſeaſe a Month or ſix Weeks before its inevitable Attack, as we can this, after Inoculation is reſolved upon, I cannot doubt but a Phyſician, well verſed in ſuch Diſeaſe, and in the *Medicina dietetica*, might ſo diſpoſe the Habit and Temperament of a regular Patient, as to give him a better Proſpect of his Recovery, than he could have done without it. And yet we do not ſeem to have as competent a Notion of the inherent *Fomes* of any acute Diſeaſe, as we may form of this; which ſuggeſts ſuch a Diet as may diſpoſe our Fluids to their State in lively active Children; as far as that State may be conſiſtent with a healthful *Craſis* of it, for the Patient's Time of Life. In fine the ſagacious HIPPOCRATES has been very accurately attentive to the moſt important Article of Diet. He ſuppoſes an Obſervation of the different Quantity and Quality (a) proper for the Sick (which we endeavour to modify and extend here to thoſe about

(a) Ἐμοὶ μὲν γὰρ, ὅπερ ἐν ἀρχῇ εἶπον, οὐδ' ἂν ζητῆσαι δοκεῖ ἐπιχείρειν οὐδείς, εἰ ταῦτα διαιτήματα τοῖσι τε κάμνουσιν καὶ τοῖσιν ὑγιαίνουσιν ἥρμοζεν. De priſca medicina.

about to be ſuch) to have ſtarted the firſt Hint towards the Diſcovery of the medical Art; and his Directions for it in Fevers are found conſonant to almoſt univerſal Experience at this Day.

Nevertheleſs, tho' we allow this juſt Precedence to dietetical Preparation, as many will need very little more; and young mild Subjects, who are preſumed to be generally kept to a temperate dilute one, if free from Worms, cuticular Foulneſſeſs, and otherwiſe healthy, will need none at all: yet in ſuſpicious Habits, and adult Years, the Aid of Medicine may be very generally neceſſary. Conſiderable Things have doubtleſs been effected in ſome chronical Diſorders almoſt wholly by Diet; but then the Perſeverance has been chronical too; and where we propoſe a much ſhorter Term for Preparation, we muſt be obliged, in ſome Caſes, to uſe more expeditious Meaſures. Beſides, where the Obſtacles are very conſiderable, the propereſt Diet may become too familiar to effect all we deſire; which ſometimes happens from the over-familiar Uſe even of Medicines, that appeared efficacious at firſt.—But to come to Particulars:

It is manifeſt, that whoever is reſolved to inoculate Children at the Breaſt, will have no need to think of a dietetic Preparation for them (provided they have not been ſo very unſeaſonably indulged in carnous and ſolid Food) and very little of any other. We will ſuppoſe their Eruptions in the Month, uſually termed the *Gum*, over before the Operation; and it were deſirable that their

Breaſt Milk were rather dilute and thin. Doubtleſs, whatever ſome Moderns may have thought, good human Milk is the moſt appropriate Nouriſhment for the Infant; though Nature has not denied us Succedaneums to it, where the Milk of the Parent, or Nurſe, might diſagree in particular Circumſtances and Habits. But as the Nurſes of griped and flatulent Infants are obliged to avoid ſome Vegetables, leſt they ſhould exaſperate ſuch Complaints; can we ſuppoſe the Milk of Cows, which is ſolely recruited from herbaceous and chiefly aceſcent Food, will be likelier to appeaſe them, than that of a ſober, wholeſome, well dieted Woman? And yet, with Regard to this particular Diſeaſe, thoſe who are brought up by Hand, as they call it, may not, on that Account, prove worſe Subjects for it than thoſe of equal Age and Vigour at the Breaſt; as the Juices of the Quadruped, who is not the Subject of it, may perhaps furniſh leſs Addition to its *Pabulum*, than the Milk from human Fluids. Their Pap from Bread and Water, at Intervals, can be no improper Diet, the latter being the great univerſal Diluter, and the former a gentle Concrete from a ſoft vegetable Chyle or Milk, prepared for an eaſy Commutation into a mild animal one. Yet ſhould ſuch an Eruption enſue, which rarely happens at this Age, and very rarely by Inoculation in it, as to affect the Lips, Tongue and *Fauces*, the Want of that commodious and even fomenting *Apparatus*, which Nature furniſhed for the Suckling of the Infant, might be an important

* Diſad-

* Diſadvantage. We have, in a former Section, averred our Diſapprobation of inoculating at this Time of Life; but if the more adventurous ſhould riſque it, it would be proper to premiſe a little Manna, or ſome other gentle Lenient, to thoſe Children who were uncommonly coſtive; which HIPPOCRATES ſays, (a) is chiefly their Condition, who heave up their Milk the oftenеſt. If they have moiſt Ears, ſuch Frictions ſhould be daily uſed, as may prevent their drying; tho' I ſhould conſider very ſore Ears and Head as contraindicatory of the Operation.

By the Time Children are weaned, eſpecially if they are any Way advanced in the ſecond Year, they have been too often indulged the premature Uſe of Fleſh, and even ſipping a little ſtrong Drink. They are in a Courſe of Dentition more or leſs troubleſome, and more generally ſubject to Worms; tho' this Diſorder has been obſerved during the early lacteſcent Months in hotter Climates. We muſt ſuppoſe none would adviſe, or conſent to, their Inoculation, under a painful and febrile Dentition, an actual Worm Fever, or any pregnant Symptom of abounding with Worms. But ſuppoſing none of theſe the Caſe, and the Operation (which we have given our repeated Suffrage for deferring, in general, to the Age of four or five) determined on, it may be prudent to premiſe a few Grains

* See P. 183.

(a) Ὁκοσοισι ὴ πουλυ γαλακτωδες ἀποεμεῖται κοιλιη ξυνιστατα. De Dentitione.

Aethiops and Corralline, or ſome other good Vermifuge, three or four Times; then to give a Grain of Calomel over Night, to be followed in the Morning with a few Grains of Rhubarb by itſelf, or in a Solution of two Drachms of Manna. If the Children are advanced towards three Years, and pretty forward for that Term, the Powders may be repeated, and the Calomel increaſed to one Grain and a half. Pale, phlegmatic and groſs Children are often the moſt verminouſly diſpoſed, and moſt liable to Infarctions of the *Viſcera*. It may not be amiſs to ſhake ſuch firſt, and empty their Stomachs of its exceſſive *Saburra*, by a very few Grains of the *Ipecacuanna*, or a Drachm and an half, or two Drachms, of the Tincture, with a little Oxymel of Squills, and half a Drop of Oil of Rue or Savin. The bitter anthelminthic Powders might be joined here to the *Aethiops*, or to powdered Tin, and their Calomel might be ſucceeded the following Morning with five or ſix Grains of Rhubarb in Tanſey Water, or with *Elixir Proprietatis* from ten to fourteen Drops, which agrees remarkably with pale cacochymic Habits. The *Aethiops* ſeems a preferable Vermifuge in thoſe Caſes, as its Operation, at leaſt 'till it becomes too familiar to the Conſtitution, manifeſtly extends beyond the firſt Paſſages, from its known Efficacy in the Cure of cuticular Impurities; which, if conſiderable from their Quantity or Irritation, ſhould be removed before the Operation. Thus, without ſuppoſing this Medicine prophylactic of this Diſeaſe, with an induſtrious Writer on it, which might encourage its extravagant

gant Ingeſtion, we can infer a judicious Uſe of it, from its freeing the perſpiratory Ducts and keeping up their important, but inſenſible, Diſcharge, with its own Evaporation from the Body; as it probably corrects too any exceeding Viſcidity and Compactneſs of the Blood. A Fortnight may generally ſuffice for Preparation at this Age, from two to three incluſive.

When Children are advanced to ſix or ſeven, and from thence towards ten, their Diet, if not neceſſarily reſtrained by the Condition of the Parents, has for ſome Time conſiſted of no ſmall Proportion of animal Food. Their verminous Diſpoſition is perhaps too rather increaſed from their Love of any bad Fruit that falls in their Way. Here the dietetic Preparation, by abſtaining from Fleſh and ſtrong Liquids, ſhould certainly be enjoined. Where there are any Symptoms of Worms, or indeed tho' ſuch Symptoms ſhould be but obſcure, they ſhould take ſuch Anthelminthics, as are appropriate to their different Temperaments; and as many of them appear pretty ſanguine, and ſome even bilious, in this Stage, it were not amiſs to purge ſuch repeatedly with ſubacid cooling Laxatives, ſuch as Manna and Cream of Tartar, genuine Glauber Salt, *Magneſia alba*, lenitive Electuary, Decoction of Senna and Pulp of Tamarinds; premiſing from two Grains and an half to four or four Grains and an half of Calomel, to their laſt Purge or two; as indeed a vermifuge Purge ſhould alſo ſucceed their Worm Powders. It were to be

wiſhed that their Bodies ſhould be rather moiſt and open the whole Term, or at leaſt the laſt Week of Preparation. This may be eaſily effected, by allowing a few freſh Prunes raw or ſtewed without Senna, which, with their vegetable Diet, will ſufficiently anſwer the Purpoſe. We are told by RHAZES, that the cool and more acid Fruits, as *Rhus*, or Sumach Berries, Pomegranates, unripe Grapes, and the like, which were even acerb, prevented the Blood from being ſo fermentable by the Diſeaſe; and we know that Acids are the natural Correctors of Bile. Whether thoſe however, which amount to Acerbity, may not by Accident accumulate the Bile by conſtipating the Belly may be queſtioned; tho' their immediate Quality were antibilious. The ripe Fruits, at leaſt the Summer Fruits, of this Climate are rarely chargeable with this Quality; and particularly our ripe Currans, or their Jelly moderately ſweetened, might be pretty freely allowed ſuch Temperaments. I ſhould, for my own Part, be for puking the Bilious, even at this Age, to prevent any Infarction of thoſe Veſſels, which ſecrete that Humour from the Blood; and keep their Bodies moderately ſoluble afterwards, to prevent any probable Regurgitation of it from its Turgeſcency in the Gall-Bladder, or its Accumulation in the Ducts. With Regard to Worms, it may be reaſonable to ſuppoſe in general, that Bodies of this Temperament are leſs obnoxious to them, and the hotter Anthelminthics leſs appropriate for them, if they were. Dr.

NET-

NETTLETON ſays, he obſerved ſuch as were vomited previouſly to Inoculation had the kindlieſt Eruption and Symptoms: but probably this might at leaſt depend as much on their different Portions of the variolous *Pabulum*, which we have ſuggeſted may ſubſiſt moſt copiouſly in bilious Habits; whence Vomiting will be particularly indicated in ſuch.

With Regard to a preparatory Bleeding in this Stage of Life, we think it can only be adviſeable, when there is a very manifeſt ſanguine Plenitude. RHAZES indeed, in his Chapter of Preſervation (many of the prophylactic Rules in which may be judiciouſly varied into preparatory ones, and were, not improbably, intended by him for ſuch, from an Apprehenſion of ſubſequent Infection) ſays generally, that Blood ſhould be taken from ſuch Boys and Youth, * as had not had the Diſeaſe. He recommends the taking it, by Veneſection, from thoſe of fourteen; and by Cupping, from thoſe under it; adding, that their Chambers ſhould be cooled. This laſt Precaution was manifeſtly adapted to his own Climate, and may admit of a rational Qualification in ours, where the Blood is leſs generally ſubject to Expanſion and Effervеſcence. At the Age of ſeven, or even to ten, a previous Bleeding would ſeldom be neceſſary with us; ſome unuſual ſanguine Plenitude may render it prudent, and I ſhould prefer Cupping here. In this and the next Stage the young Patients are ſubject to over-heat themſelves

* The *Latin* Tranſlation has it, *pueris et juvenibus.*

ſelves by extraordinary Action and Exerciſe, which ſhould be avoided with Care previouſly to Inoculation, and ſtill more after it, particularly if the Weather be tepid. I am repeatedly convinced, that any extraordinary Conturbation of the Blood from long external Heat, or violent Motion, may act to as material an ill Effect, as if too much ſtrong Liquor, or an inflaming Meal had been ingeſted. Beſides one Inſtance of this, which I have * already given, Mr. GOLDWYER, an eminent Surgeon at *Saliſbury* informs me, that one of the four, who failed by Inoculation there lately, was a healthy young Woman of twenty-three Years, who, unknown to the Apothecary that inoculated her, had heated herſelf over a great Fire two or three Hours, and immediately ſhifted, juſt before the Operation. This unhappy Conturbation of the Blood, meerly from great Agitation, (in which it reſembles other fermentable Fluids) without the Ingeſtion of any new Matter, is not without ſome Analogy to its Infection from an Imagination ſurprized and hurried at the Appearance of a lately variolous Subject, after it was reaſonable to ſuppoſe an entire Evaporation of the infecting *Effluvia*. But to return — If pure Water had been their Drink hitherto, it were well to continue it. To others very clear ſweet Whey, when procurable, with or without any of the temperate cooling Plants, may be pretty freely allowed. And light Small-beer neither

* See P. 210.

neither too ſtale nor flatulent, may be indulged thoſe who have been accuſtomed to it. All Cheeſe ſhould be avoided as much as Meat at all Ages; if they have been uſed to much Butter, the Quantity ſhould be leſſened, and it ſhould be recent and well-taſted. Where the Milk they uſe is rich and undiluted, a third or fourth Part of pure Water ſhould be added; more eſpecially if the Patients are remarkably ſanguine and young; as conſiderable Hæmorrhages by the Noſe often happen to ſuch in the *Apparatus* of the Diſeaſe; which, tho' not very formidable in that *Stadium* to the Phyſician, may frighten the Patient or his Friends: in which Circumſtance, by the Way, it will be proper to withold all vinous Milk Poſſets, Milk Porridge, and even Milk and Water: allowing Barley Water plain, or very gently acidulated, if the Bleeding ſhould be very profuſe.

But with Regard to the Quantity of their Food before ſickening, ſuppoſing the Quality well regulated, and their Appetites ſhort of voracious, I ſhould not be for ſtinting them (tho' it may be prudent that Supper ſhould be a moderate Repaſt) and particularly in the early Stages of Life, when (a) Faſting is leaſt wholeſome and tolerable. Dr. NETTLETON complains of the ill Effects of too low a previous *Regimen*, and particularly in the firſt Stage of the Diſtemper. And indeed we might apprehend that Conſtitutions

(a) Νηϛειην φερϐσι ἥκιϛα μειραϰια, παντων δ' μαλιϛα παιδια. L. 1. Aph. 13.

tutions naturally mild with Regard to this Diſeaſe, may be rendered, by too depreſſing a *Regimen* previous to it, more obnoxious to nervous Symptoms and Inſults on the Invaſion of it; to which if a competent Fever ſhould not ſupervene, Eruption might be unhappily delayed, or even fatally intercepted. The Purpoſe and Scope of Preparation is to remove or leſſen the inflammable *Diatheſis* of the Blood, and the extreme Tenſion of the Solids; but not to depreſs the *Vis vitae*, eſpecially in this, or the preceding Stages of Life. And indeed it may happen here and there, that a Perſon, at any Term of Life, tho' not actually morbid, may be naturally of ſo low a Conſtitution, from an over lax Fibre, and a Languor of the chylifying and nutritive Faculty, that he would prove an improper Subject for this Operation, before he had received ſome Invigoration from an eupeptic, reſtoring and even reaſonably generous Diet. It will abundantly follow then, that where the Patients in theſe early, or in any ſubſequent Stage, have the plaineſt Signatures of a naturally mild and leſs inflammatory Habit, a lighter and leſs operoſe Preparation may be judicious. Repeated unneceſſary Purging, eſpecially with the ſtronger Cathartics, may render a Blood naturally ſoft and balſamic, too ſharp and acrid, a State we would gladly remove: tho' there may be no injudicious Uſe of ſuch in particular ſluggiſh and cacochymic Habits. If Children, within the Term we have been treating of, have been uſed but to a ſmall Proportion of

animal

animal Food, a ſhorter Abſtinence from it may be ſufficient: ſo that three Weeks in ſome, and four in others, may be a convenient Term for their Preparation.

But on the full Approach, and thro' the Progreſs, of Puberty, to the Height and Vigour of Life, the Caſe is greatly altered; eſpecially with Regard to thoſe who were naturally ill diſpoſed for the Small Pox; and ſtill more particularly, if they have much indulged in the Intemperance too habitual with many in theſe Stages. I have little Doubt but Numbers, thus circumſtanced, ſurrender to the natural Infection, who might have emerged thro' even that in the preceding Stages. In Fact the ingenious phyſical Suggeſtion of our moſt elegant ethic Poet, That

—— *Man, perhaps, the Moment of his Breath*
Receives the lurking Principle of Death:
The young Diſeaſe, that muſt ſubdue at length,
Grows with his Growth, and ſtrengthens with his Strength.

Seems as juſt, with Regard to the *Fomes* of this Diſtemper, as of any other. As the Anticipation of this long and perilous Term then, by an early Inoculation, when a lighter Reſtraint and Preparation might be generally ſufficient, was truly eligible for thoſe, who were ſubject to this Diſeaſe, and muſt be expoſed to it; ſo in ſuch as have pretermitted it, and are equally expoſed, as its greater Neceſſity ſeems abundantly inculcated from

from the greater Havock of the natural Diſeaſe throughout the Vigour of Life, a judicious and accurate Preparation for it is ſtrongly indicated from the ſame Motive. For tho' ſome Perſons from twenty even to forty may be better Subjects than others were from five to ten, or indeed ever were, this is not taking the Matter as generally as we purpoſe it; but deſcending to the Caſes of Individuals, which will often have ſuch particular Circumſtances, as muſt be referred to the Conſideration of their moſt intimate Phyſicians, who muſt be, *caeteris paribus*, their beſt. To abate and mollify then the extended inflammable *Pabulum* in ſuſpicious Habits, at ſuſpicious Times of Life, we ſhould propoſe at leaſt ſix Weeks as the *Greeks* do, and, where it was practicable, two Months, in ſome Situations, might be ſtill better. The Mitigation of this connate *Fomes*, which has been ſtrengthened by Time, expanded with Accretion, and even invigorated by Health (abſtracted from all the Contingences of different Climates and Exceſſes) is undoubtedly difficult: it ſavours of an Attempt to alter the ſpecific Conſtitution and *Stamina* of the Patient, and calls for all the Caution, as well as Knowlege, of the Phyſician: ſince theſe can be bent or altered only to a certain Degree, without a morbid Conſequence, to avoid which, the Alteration muſt be gradual. *Hic labor hoc opus eſt.* There may, without Exaggeration, be ſome Difficulty in miſconducting the milder Subjects of the Small-Pox, thro' the ordinary Progreſs

greſs of it by Inoculation. The oeconomical Functions of Nature are ſo perſeveringly right in certain Habits and Circumſtances, that Perverſity, as well as Ignorance, becomes neceſſary to an effectual Oppoſition of them. Such Situations may be juſtly compared to thoſe (a) gentle Seaſons and ſmooth Waters, in which HIPPOCRATES obſerves, the Helm may be committed to an indifferent Pilot; while the oppoſite Circumſtances of adult Age and inflammable Conſtitutions will correſpond to his Storms and Billows, that require the utmoſt Addreſs of the moſt experienced; and expoſe that Ignorance of the unſkilful, which the fine Weather had concealed. And yet in ſuch critical Circumſtances every ingenious and experienced Phyſician, who has conſidered this Matter well, may have ſufficient Reaſon to infer, that on availing his Patients of all good Circumſtances, Perſons naturally of unpromiſing Temperaments, and leſs convenient Ages for the accidental Diſeaſe, may have a reaſonable Expectation of paſſing very tolerably thro' that by Inoculation. If he is very ſanguine, he ſhould undoubtedly be bled early, and pretty freely, yet ſo as to avoid too great and ſudden a Depreſſion: if he is ſtill more intenſely ſanguine, with deep red or purpuraſcent Bumps in the Coun-

(a) Ἐπει οἱ πολλοι γε τῶν ἰητρῶν ταυτα μοι δοκεουσι τοῖσι κακοῖσι κυβερνηταις παρεχειν· καὶ γὰρ ἐκεινοι ὁταν ἐν γαλβνη κυβερνῶντες ἁμαρτανωσιν, ἀ καταφανεες εἰσιν· ὁταν ὴ αὐτοις καταιχη ἀνεμος τε μεγας, και χειμων, φανερῶς ἤδη πᾶσιν ανθρωποισι δι' ἀγνωσιην καὶ ἁμαρτιην δῆλοι εἰσιν ἀπολεσαντες τὴν νᾶυν. De priſca Medicina.

Countenance; and particularly if theſe are chargeable to hard Drinking (which is not conſtantly the Caſe) bleeding ſhould be repeated, ſuch a Blood being generally very pregnant with the variolous *Fomes*. This we are endeavouring to leſſen, to dilute and lower the inflammable Principles of what remains; and to ſubſtitute, by a proper Aliment, ſuch a ſoft and ſimple Chyle, as ſhould conduce to a leſs irritable and irritating *Cruor*. If he has been remarkably fond of Fleſh-Meats, and even indulged on ſuch Suppers, he may be allowed for the firſt Week, to make the Alteration more gradual, white Meat once every other Day. It were undoubtedly to be wiſhed he could entirely abſtain from ſtrong Liquor: but if from long Habitude he ſhould prove languid, and ſeem to concoct leſs for Want of it, one Glaſs may be permitted after Dinner. The ſecond Week he ſhould begin to abſtain wholly from Fleſh, but may add every other Day, a Whiting, freſh Water Flounder, or ſuch light ſimple Fiſh, to his vegetable Dinner; and an equal Quantity of Water to his Glaſs of Wine after Dinner, if it is ſtill too irkſome to take an entire Leave of it, 'till his Recovery from the Diſeaſe. His Diet from hence ſhould be entirely vegetable; his Drink no ſtronger than good light Table Beer. His Puddings ſhould not be over-ſtiff, nor crammed with Eggs. Fruit Pyes and Tarts may be allowed, reaſonably ſweetned: moſt Vegetables, the hot and acrid (as raw Onions, Creſſes, Muſtard) excepted, are very proper:

proper: but particularly, if good mellow Turneps and ſucculent Spinage are in Seaſon, they are either very excellent and appropriate in themſelves, or I am much prejudiced in their Favour on this Occaſion. If good Vinegar be not diſagreeable, the moderate Uſe of it is not like to be inconvenient. The cooling Salads, with a Mixture of Cellary are not amiſs. Young open Spring Cabbage and Sprouts ſeem preferable to cloſe, heavy, large Cabbage, which may have attracted a conſiderable Proportion of animal Sulphur and Salt into their Subſtance from their ordinary Compoſt, during their long Vegetation, as the ſtrong Smell of their Decoction ſeems to indicate. Such a Savour may certainly reſult, in ſome Degree, from the eſſential Quality of the Plant; tho' in the hotter Climates, where their Texture is more rareſcent, and their Perſpiration greater, their Sapour is ſenſibly milder, their Odour leſs indelicate. Yet, when the Sprouts and Spring Cabbages are not to be had, as the other well-boiled are apt to keep the Belly ſoluble, they may be allowed ſometimes. I was once inclined to heſitate, upon the ſame Principle, whether Aſparagus, from its known diuretic Quality and Alteration of the natural Smell of Urine, ſhould be very freely indulged in on this Occaſion. In this Climate the Soil for it is generally furniſhed with a high ſulphurous ſaline Compoſt, which may exalt this Effect of it, without ſuperadding a new Quality, or altering the eſſential Nature of the Plant from that of

the indigenous, which is ſaid to abound on the Banks of the *Euphrates:* tho' ſome Perſons who admire this Plant, remote from *London*, are ſaid to be averſe to it here, as ſtronger and leſs palatable. But whatever material Diverſity this may produce, ſome have imagined, that particular Salts, conveyed into the Humours, prove attractive of the like there (from the Axiom of *ſimile ſimili gaudet)* which they ſegregate and carry off. From ſuch a Suppoſition perhaps ſome have adviſed ſick Perſons to drink their own Urine; while others have recommended Sea-Water as a Cure for ſuch Scurvies, as we ſhould aſcribe, in ſome Meaſure, to a muriatic State of the Blood. Now the ſenſible Taſte or Smell of Aſparagus raw or boiled has nothing of that particular Odour it ſuperadds to human Urine: if it has produced this, in Conſequence of its determining a greater Proportion of excrementitious animal Sulphur or Salt to the Organs of urinary Secretion, and left leſs of its own behind, this purging by Urine will rather have a Tendency to defæcate and cool the Blood. All the Paſſages ſhould be free during Preparation, and the only Doubt can be, whether it may not prove ſo diuretic, as to evacuate too great a Proportion of the diluting *Serum*. Yet on the whole, tho' we would omit no Hint that others may improve, from a puerile Dread of Cenſure, it is probable the Matter is hardly worth a Litigation; and, where Aſparagus is liked, it may be uſed with ſufficient Safety, as a ſoft palatable

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Mucilage, and a pleaſant Variety in this limited Diet: by which, tho' we do not propoſe any ſenſible Depreſſion of the Patient's Strength, we aim at a Mitigation of it; and to add ſuch a Doſe of Alloy to the Metal, as may render it more ductile and tractable.

This Kind of *Regimen* will often diſpoſe the Belly to be moiſt and ſoluble, and render much purging the leſs neceſſary; ſo that a gentle antiphlogiſtic Lenient once a Week, before the Infuſion, will generally be ſufficient. It may be prudent however to premiſe a few Grains of Calomel, proportioned to the Age and Strength, to the two, and in ſome Inſtances, to the three laſt Lenients; by all which we would endeavour at a reaſonable Diſcharge, without great Commotion or Sickneſs.

Much the ſame Preparation will anſwer for the adult bilious Patient; tho' a ſingle Bleeding may ſuffice here, particularly where the Habit is dry withal. But a Day or two after the Bleeding a moderate Vomit ſhould be enjoined with plentiful Dilution; and if it terminated in a Stool or two it would not be the worſe. He may conveniently indulge in the acid Juices, as thoſe of Lemon and Orange, and add the beſt Vinegar to his Spinage and Greens. In Adults in general, where the Teguments are rigid and thick, and Sweating is difficult, I ſhould think the repeated Uſe of tepid relaxing Baths, after the former general Evacuations, and upon empty Stomachs, would bid very fair to be of great Service. Such

Teguments are too frequently indicative even of a bad internal Diſpoſition for the Diſeaſe, as they are certainly a bad external Circumſtance for it. Dr. HAHN juſtly obſerves, that the (a) different Texture of the Skin in different Nations and Families is an adequate Reaſon for the different Severity of the Diſeaſe; and a chief Cauſe that ſome entire Families are deformed by the Scars of the confluent Small Pox. RHAZES recommends ſwimming in cold Water among his other Prophylactics, which with us might prove a better Preſervative than Preparative: and in this Climate, where we do not propoſe to ſelect our only ſwimming Seaſon for that of Inoculation, it may be advantagiouſly commuted in bad Habits for the other; where gentle and repeated Frictions will conduce to remove any cutaneous Obſtructions; a ſubſequent dewy Perſpiration will relax the Teguments, and further clear the Ducts; and where a Quantity of pure Element, repeatedly inſumed by the *vaſa inhalantia* may conſiderably dilute and attemper the Maſs; and thus diſpoſe the Fluids and Solids, as far as we can without Violence, into the young and ductile State. The Bilious ſhould indulge the leaſt in Milk, Butter or Sweets. RHAZES nevertheleſs recommends, among his Preſervatives, Butter-Milk; and where it

(a) Atque in tali, tot, et multo pluribus modis variante cutis fabrica, qua nationes a nationibus, familiae a familiis diſtant, potiſſimam varioloſae difficultatis culpam reſidere arbitror; et ſaepe ſolam et ſufficientem rationem, cur integrae familiae confluentium barbariae expoſitae eò condemnentur, ut etiam extra lupercalia circumferant facies larvatas. *Variol. Rat.* § 96.

it does not disagree, itself and its Whey seem well adapted to cool; and have been found particularly serviceable in some hectical Habits. He also recommended to hot Temperaments an Addition of Ice to their Water. Pure Spring Water would be equivalent here, and answer particularly in the dry, hot and bilious; where the Adults Stomach would bear it tolerably. But the Physician employed can only be the adequate Judge of this and many other Circumstances; and there is little Hazard of his committing any material Error in it, who has thoroughly digested the very judicious Admonition of HIPPOCRATES, in making (a) proper Allowances for the Diversities of Seasons, Climates, Age, Constitutions and Customs. I must aver, however, that, in the Course of my moderate Experience of this Affair, I have known no considerable Inconvenience, but a general Melioration of Body for the Distemper, from this Transition to a fluid and vegetable Diet, from a common one. I have repeatedly heard those advanced in the *Regimen* confess, they were lighter and had better Spirits under it, than from their ordinary Course of Life, which might be called rather liberal than too moderate; no slight Indication of the general salutary Effects of a light and temperate Diet. Soup-maigre, that is, without Meat, of the temperate Plants and Bread, with the fine subacid gelatinous Pulp of the ripe *Tamata* or Love-ap-

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(a) Δοτεον δε τι κ) τη ωρη, κ) τη χωρη, κ) τη ηλικιη, κ) τω εθει. L. 1. Aph. 17.

ple, called by the Botaniſts *Lycoperſicon*, would make an agreeable Variety, and even a palatable Regale in their Food. This reminds me of the general Diet of our *French* Neighbours, which is not ill adapted to this Diſeaſe in a bilious Temperament, to which they ſeem to approach a little more than ourſelves; and, upon that Score, might prove more indifferent Subjects for the Small Pox: But it may be apprehended their Uſe of ſmall light Wines, and very conſiderably diluted, of Water by itſelf, their Salads, their plentiful Soups, their more limited Uſe of Fleſh, and their whole *Ratio vivendi* incline the Balance, with Reſpect to this Diſeaſe, in their Favour. Such a mild humecting Diet gently relaxes the Fibres and Teguments, in Conſequence of its diluting the Blood. And ſuch a State of the Teguments has been not ſeldom experienced to counter-operate many threatning Symptoms from a very copious Eruption: ſo that the Texture and Conſiſtence of our Invelopements are often at leaſt of equal Import, with their Complexion.

The worſt Temperament for this Diſeaſe remains; which gives me ſome Idea of what the Antients termed the atrabilious; and which implies to me ſuch a Shade and Darkneſs of the Complexion as People commonly attribute to a black Jaundice; in which the Blood ſeems to be in a kind of empyreumatic State. A ſmall Proportion of theſe I imagine emerge through the natural Diſeaſe: they look conſtitutionally morbid here, where we cannot conſider the meer Climate conducive to it. An

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exquiſitely inſtituted Inoculation muſt give them their beſt Chance, and even the moſt judicious one might ſometimes miſcarry. Conſiderable internal and external Humectation ſeems indicated here; and if we could effect a moderate Succulence of the Habit, a Tenuity of the Surface, and a little Clearneſs of the Complexion, it might afford a reaſonable Proſpect of Succeſs. It is happy that we do not abound with Perſons of this natural Dyſcraſy, which generally appears too ſullen and inflexible, to ſubmit to a competent Alteration in the adult and advanced Stages, in which it ſeems to appear more intenſe too.

Preparation ſhould be ſo timed and adjuſted for Women and adult Virgins, that the Operation might take Place ſoon after the compleat Termination of the *Catamenia*. Mr. RANBY ſays, three or four Days after their going off; which indeed, ſuppoſing a gentle Diſtemper to enſue, will admit an Interval of three Weeks before their ordinary Return; a ſufficient Term for the Tour of the Matter, and Revolution of the Diſeaſe. Doubtleſs inoculating very ſoon after this natural ſanguinary Depletion of the Sex has a cloſe Reſemblance to the preparatory Bleeding we have recommended, in adult ſanguine Patients: and in Blood proportionably pregnant with the variolous *Fomes*, the ſmaller Quantity of the former muſt contain a ſmaller of the laſt: whence the Practice is rational in itſelf, beſides the Sanction of long Experience in its Favour. I ſhall however obſerve here, that having had a Gentlewo-

man of a full Habit and about forty, in the natural Diſeaſe, and in very hot Weather, her *Catamenia* came down in the *Apparatus*; and, as ſhe apprehended, in their proper Courſe. Her Acquaintance were apprehenſive of her Danger in the Small Pox, from her Habit and Time of Life. Her Complexion too was rather brown, but not an unclear one; for I think there is ſuch a Diverſity. They flowed throughout the whole Term of Eruption, which was very moderate for a natural Infection in ſuch a Subject and Seaſon, and ſhe had a truly regular benign Diſeaſe.

To confeſs the Conſequence of this Caſe on myſelf, I conceived a Hint, that as it ſeemed highly probable, this regular uterine Depletion conſiſted of variolated Blood, it might prove an adequate or conſiderable Cauſe of the moderate Eruption and kindly Diſeaſe that enſued: whence the Inference was obvious, of ſo timing the Inoculation of adult Females, eſpecially where we apprehended the greateſt Eruption, that the regular Deſcent of the *Menſes* ſhould coincide with the *Apparatus* of the Diſtemper. In the Conflict between Nature and Diſeaſes, Phyſicians find ſome Occaſions of judiciouſly declining that direct Engagement, in which they ſolely rely on the Strength of material Preſcription; but, like prudent Generals, obtain Advantages and final Victory by Diſpoſition and Stratagem. This medical Stratagem, nevertheleſs, I am unable to recommend from any further and purpoſed Experience, as I found the former Practice very

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ſucceſsful, and thought of the *Spaniard*'s Epitaph, who died, becauſe he wanted to be better than well. And yet when I compare the Event of this Caſe with the Relation Dr. FULLER gives us of a Student at *Oxford*; who, during an epidemical Small Pox there, was ſeized with a cruel Pain in the Head and Back, and a *Delirium*, with the Eruption of many Puſtules, pronounced to be the Small Pox by his Phyſician; but all which Symptoms and Appearances entirely vaniſhed on his bleeding about two Pounds by the Noſe, the Patient quickly recovering, and for thirty Years after never avoiding nor receiving the Small Pox: I ſay, when I recollect this Caſe, and the Probity of the Relator, I have wiſhed the former Hint repeatedly experimented on proper Subjects, juſtly obnoxious to it, to determine if a ſimilar Benefit ſhould prove its general Event. And as I recollect a little Inſtrument for effecting a Hæmorrhage of the Noſe *ad libitum*, it may be conſidered, whether the Application of it in ſanguine Subjects, with an inveterate Head-ach, in the *Apparatus* of the Diſeaſe; or in a very early Eruption, accompanied with high inflammatory Symptoms, might be judicious, from its diſcharging ſome of the Blood in the *Carotids*, which, we imagine may be charged with the moſt energic *Miaſmata* of the Diſeaſe. But theſe, and many other Imaginations, I willingly expoſe to every medical Stricture and *Criterion*, for the Chance of their proving ſalutary to any, and improvable, or reprovable, by

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ſome other to my own Emolument, or Conviction.

But all Perſons ſhould be prepared, if practicable, at a ſufficient Diſtance from infectious Scenes and Accidents; notwithſtanding Multitudes have been prepared, to a very happy Event, very near, and even in, *London*, and other infected Towns in *Aſia* and *America*. We had already obſerved the Peril and Abſurdity of carrying thoſe to be inoculated to the Houſes of the Sick (as *Caſſem' Aga* with his Brothers and Siſters were, to * receive the Matter there) and now repeatedly inculcate it; as it muſt be a Satisfaction both to the Patient and Phyſician, to be free from all Apprehenſion of any natural Infection, of any Mixture, Confuſion, or poſſible Exacerbation of the Diſeaſe from a variolous Superfætation, as ſome may ſuppoſe it: notwithſtanding we think it muſt appear probable, with Regard to Inoculation, that where a very little Matter infects, the Addition of a little more, and at a ſubſequent Term too, is † attended with no Exaſperation, nor a longer Continuance of the Diſtemper. To confeſs a bold Error perhaps, I have ſometimes imagined, that Inoculation being admitted ſoon after an unconſcious Infection,

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* It ſhould have been elſewhere mentioned, that this Ambaſſador from *Tripoli* declared, that not two out of an hundred die from this Practice, but about thirty out of a hundred by the natural Infection. And in the Section of the Riſe of Inoculation we ſhould have added from him, that it is ſo antient in *Tripoli*, *Tunis* and *Algier*, that no Body remembers its firſt Riſe: and that it is generally practiſed, not only by the Inhabitants of the Towns, but alſo by the wild *Arabs*.

† See the Caſe of the youngeſt Miſs MATY P. 166.

may not only not exaſperate its ordinary Operation; but poſſibly be attended with ſome Benefit from the Revulſion occaſioned by the variolated Inciſions, if they ſhould diſcharge well. Perſons after Inoculation are generally kept out of the Way of a ſubſequent Infection, which is highly prudent; tho' there will be pretty much the ſame *Rationale* for ſuppoſing the infected Inciſion to act ſimilarly in this inverted Situation, and perhaps the more ſo, as their Inflammation may be more advanced. I do not however mention either of theſe Suppoſitions, as what I would ever wiſh to be experimented on any innocent Perſon; but as meer medical Suggeſtions, the Crudity of which, and of many others, Time for further Reflection, with the divine Permiſſion, may convince me of.

It were ſuperfluous to mention Abſtinence from ſalted Fleſh during Preparation, when Abſtinence from Fleſh-meat, and more particularly from all ſuch as uſe to be ſalted, has been affirmed neceſſary. But it may be aſked, if Salt itſelf is allowable with the humid and vegetable Diet enjoined then. We have already evinced, * that the fixed Salt of the human Syſtem is, in Effect, marine eſculent Salt, and diſtinct from that volatile alcalious one, ſuppoſed particularly inflammable and varioleſcent. The former is probably never volatilized by the Sun from the ſalteſt Parts of the Ocean in the hotteſt Climates; and raiſed from the *Caput mortuum* of human Blood and Urine, not without a calcining Heat; while the vola-

* See P. 44.

volatile Salt and Sulphur of dead Bodies very ſoon and perceivably take Wing, without any chemical Proceſs, in hot Weather. I cannot learn that Sailors, whoſe Bodies muſt be conſiderably ſaturated with this fixed Salt, are more obnoxious to the high and mortal Degrees of the Small Pox, than Landſmen of the ſame Age and Temperament. Doubtleſs it may have a Tendency to induce that Rigidity of the Solids, which appears an unfavourable Circumſtance for an eruptive inflammatory Diſeaſe: but it may deſerve our Reflection, whether its Reſiſtance of Fermentation and Putrefaction may not counterbalance, and often outweigh, ſuch an Inconvenience. Some Proportion of it has certainly its material Uſes in the human Syſtem, or we had never, from the earlieſt Accounts of Time, had ſo general an Appetency for it. The *American* Indians are ſaid, when without this Commodity, to ſupply the Want of it with the Aſhes of Oak and Hickory; which ſhould ſeem but an indifferent Exchange for it, in thoſe preparing for Inoculation. And the Deer and Buffalo of *America* certainly have a Taſte or Inſtinct, by which they diſcover ſaltiſh Soils, where they recurr to lick the Earth, and leave plain Marks of it; the Hunters frequently beſetting them at ſuch Haunts. Other Quadrupeds, into whoſe Food it does not ordinarily enter, are relieved from different Diſeaſes by it: And every one who has peruſed the many Caſes and Cures related by the learned Drs. RUSSELL,

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WILMOT, FREWIN and LEWIS, in the former's Treatiſe *de Tabe glandulari*, muſt think the Salt-water a very material Auxiliary in preparing ſtrumous Bodies for Inoculation. But ſuppoſing the Conſtitution clear of every ſcrophulous Taint, if Salt agreed with them at other Times, ſuch a moderate Uſe of it, as did not diſpoſe them to be hot and thirſty, may be allowable. The very Sanguine and Bilious might with Advantage perhaps withdraw a little of their uſual Quantity at other Times, eſpecially if they were addicted to much, and blend from fifteen to thirty Grains of pure Nitre, according to their Age, daily with it: but this will ſeldom be neceſſary in Children, never in Infants, and would be imprudent in cool low Habits.

During Preparation, and after the Infuſion, it will be right to confirm the Patient in the beſt Opinion of its good Effects in general, and the ſtrongeſt Hopes, even to a moral Certainty, of his own going happily through it. This may be fairly done; but if the Suppreſſion of any fatal Miſcarriage, or the Extenuation of any leſs Misfortune from Inoculation, were ever excuſable, the Encouragement of a preſent timorous Subject of the Operation muſt be the beſt Excuſe for it. Hope is a moſt efficacious, tho' impalpable Cordial, which very benignly fortifies the oeconomical Functions of Nature, by a direct Application to the Mind and its vital Inſtruments. Nevertheleſs a prudent Phyſician will remonſtrate the Neceſſity of ſome Fever, and a

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few Symptoms previous to Eruption, which ſo very generally happen even to the Inoculated; that his Prediction of the final good Event of it may be the better credited.

If thoſe to be prepared have any Iſſue, not yet dried up, tho' it has entirely fulfilled the Purpoſe of its Application, and the Patient has been judged healthy enough for Inoculation, the Iſſue ſhould not be ſuffered to incarn and cicatrize, but be gently touched with the variolous Matter, when another Inciſion, if another ſhall be thought prudent, is made and infected: ſince this new Stimulation of an old Sore may be apt to quicken the Rout of the Humours to a Part they have been accuſtomed to.

Thus much concerning variolous Preparation, with Regard to the different Ages and Temperaments; to which we ſhall add, that ſuch a very latently perverſe Subject for this Diſeaſe may ſometimes, however rarely, preſent in any of them, as to diſcredit the beſt concerted Operation: For tho' we have ſufficient Marks and Signatures for diſtiguiſhing, in general, the Circumſtances and Appearances favourable or unfavourable to Inoculation; yet as the Diſcernment of the moſt Sagacious is no ways intuitive; and the moſt ſeemingly well conſtituted Body may have ſome Peculiarity of Texture in the Solids, of *Craſis* in the Fluids, or of Conformation in ſome organical Part, concealed from us, but diſcoverable by this penetrating Diſeaſe, a Miſcarriage may occur once in a thouſand Inſtances, where the moſt

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Sagacious could not have expected it. But this is no more than what occurs, on different Occaſions, in the Application of the beſt Means, under the beſt human Direction. It has a Tendency, as the BISHOP of *Worceſter* excellently obſerves, to refer us to our ultimate Dependance on the SUPREME CAUSE, as it ſuggeſts our profoundeſt Veneration of His ſole Omniſcience, whoſe Ways are paſt finding out.

I cannot finiſh this Section without averring, I have never imagined myſelf preſcribing any thing in it to the Conduct of my numerous Superiors in medical Erudition, Experience and Ability, wherever reſident. But as Inoculation has ſometimes been crudely enterprized, and conducted too remotely from, or too independently of, the Influence of ſuch: And as a principal Purpoſe of this Treatiſe is to render it equally ſafe and extenſive, I have indeed hoped this Mite of my Experience and Reflection on the Subject might conduce to ſuch Purpoſe. For to diſclaim ſome Experience of, and conſiderable Reflexion on, it, muſt have been falſe and affected; and render this Addreſs to the Publick concerning it abſurd and impertinent.

SECTION X.

Of the Appearance and Conduct of the Diſeaſe by Inoculation.

BUT ſince the moſt appoſite Preparation, hitherto diſcovered, cannot reduce the inherent Cauſe of this Diſeaſe to the ſame Quantity or Inaction; cannot bring the vaſcular and nervous Syſtem to the ſame Tone or Irritability; nor the Integuments, with the Glands and Ducts terminating in them, to the ſame Stricture or Laxity in all Bodies, it neceſſarily follows, that a different Proportion of Eruption, attended with different Symptoms, or various Degrees of the ſame, muſt happen to a Variety of inoculated Subjects. A Power of effecting the contrary were eaſily extendible, perhaps, to the Eradication of the inborn *Fomes* itſelf, whatever it may be, with all it humoral Attachments, which muſt render Contagion inoperative, and Inoculation ſuperfluous. Yet tho' we find Preparation and Inoculation neither to effect this, nor to alter the eſſential Nature of the Small Pox; which

if they did, the Operation might be no ſubſequent Protection from it, they very generally produce a great Mitigation of the Symptoms, and an Abſence of ſuch as precede the confluent Diſeaſe. The violent *Lumbago* particularly, ſo frequent a Fore-runner of that Confluence thro' which ſo few emerge, I never knew occur to the Inoculated, under the greateſt Eruption it has been my Lot to ſee upon them. Their Pains are much oftener about the *Scapulae*, Breaſt, *&c.* and rather laſſitudinary and erratic, than ſharp and fixed. I have known the febrile Invaſion pretty acute from Inoculation, but very rarely riſe to a *Delirium*, which it often does in the natural Diſeaſe, even tho' a diſtinct Eruption enſues. This ſeems to intimate that the internal *Carotids*, and the Baſilary Artery, branching into the Brain and its Membranes, are not much loaded with a very irritative infected Blood. And as the Inciſions, juſt before ſickening, always itch more than uſual, and ſometimes very conſiderably, it looks as if this external Stimulation had a particular Tendency to invite the more irritative Particles, into the more external Part of our vaſcular Syſtem.

It is not unuſual for the Inoculated to complain at firſt of a Giddineſs, inſtead of the ſevere Headach, that ſometimes attends the natural Diſeaſe. A Daughter of my own, of ſix or ſeven Years old, was invaded at the uſual Term after Inoculation with a ſlight *Vertigo*, and aſked me, if People that were drunk were not ſo? She had

ſcarcely any other Complaint, a ſlight Fever, and about forty Puſtules.

Children are apt to doze much before Eruption, and to have a warm dewy Moiſture on their Surface, which is preparatory to Eruption, and generally a benign one. There is a frequent *Nauſea* too, which terminates for a Time, in puking on drinking, or moving out of a decumbent Poſture, after which they generally ſay they are much eaſier.

Such Fluſhings and Redneſs appear ſometimes previous to, and ſometimes a little after, Sickening, as would give us dreadful Apprehenſions from natural Infection: but it is very uſual for them to vaniſh, and a placid gentle Eruption enſue. I have ſeen them repeatedly on the inoculated Limb; and if any Part of the Body itches at this Time, which is not uncommon, ſuch Suffuſions are apt to follow even a ſlight Scratching, (a pretty obvious Indication of the State of the Blood then) but they commonly diſappear ſoon, and without any ill Conſequence. Such I ſay I have ſeen, but Mr. RANBY has favoured me with an extraordinary Inſtance on this Head.

A Child of ſix or ſeven Years ſickened the ſixth Day from Inoculation, with the ordinary Symptoms; but the next Day a univerſal Inflammation fluſhed out all over the Body, accompanied with a quick febrile Pulſe, and a Raſh, that gave it ſomething of an eryſipelatoſe Appearance. It was previous to Eruption, and terminated the third Day, before that was compleat.

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The variolous Puſtules were few, and the Diſeaſe was benign. It was ſuppoſed in a former Section * the infuſed *Pus* might waſte and expel ſome of the humoral *Fomes* before the actual Formation of the Diſeaſe; and that theſe Fluſhings might be one Method of effecting it. I cannot help conceiving that natural Infection muſt have operated violently on this Subject; and have mentioned this Caſe to prevent Practitioners from being greatly alarmed by any tranſient Efflorescences previous to Eruption.

Hæmorrhages by the Noſe occur, ſometimes previous to, and ſometimes during, Eruption; eſpecially if the Inoculated are adult and ſanguine, or approaching towards Puberty. Such have generally a certain Tenſeneſs in the Pulſe, a Pain in the Head, and Fluſhings in the Cheeks previous to it; and, juſt before the Eruption, an Itching in the Noſtrils. As it was formerly ſuggeſted, that the irregular Eruption of the *Menſes* in this Stage might be variolous, perhaps it were worth trying, if the Blood from theſe Hæmorrhages by the Noſe would impart the Small Pox.

Now during any of theſe Symptoms in the *Apparatus*, ſuppoſing them in no very exorbitant Degree, I apprehend a judicious Phyſician will preſcribe nothing more than a Regulation of their uſual Drinks and Spoon-meats, if they ſhould have an Inclination to the latter, which is rarely the Caſe, unleſs the ſucceeding Eruption prove little. But where vinous Wheys are allowed, it may be proper to vary the Strength and Quantity of them

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* See P. 173, 174.

in different Subjects and Symptoms, and to order different Drinks in ſome: Thus vinous Poſſets and milky Drinks have already been forbid to thoſe under Hæmorrhages, or where the Patients were very ſanguine, and of that Age moſt ſubject to them. Pippin Tea, Balm Tea, and Barley Water gently acidulated, are proper for ſuch. As I ſuſpect the Blood from theſe Hæmorrhages to be variolated, and conceive no artificial one could withdraw it as ſpecifically, no ſlight one could induce my Conſent to bleeding, in order to check it by Revulſion. Yet if it flowed conſiderably, and the Patient had been ſome Time coſtive, a lenient and cooling Clyſter ſhould be injected; and this Symptom is much oftner accompanied with a dry, than moiſt, Belly. But if any Puſtules had appeared and did not ſubſide, or greatly loſe their Colour, and the Pulſe was not low or intermitting, the Diſcharge would ſeldom be menacing. An * Inſtance has been given, even after Eruption, where it diſſipated that, and judged the Diſeaſe, as the *Greeks* phraſe it. The ſame Diſcharge before Eruption had perhaps prevented it.

I have rarely met with a poſitive Indication for Bleeding in the *Apparatus* by Inoculation, where the Patient had been judiciouſly prepared for it. If a raging *Delirium* however ſhould ariſe (which is very unuſual, and ſhould carefully be diſtinguiſhed from a light wandering one) a vehement Pain in the Head, inflamed Eyes, the Patient being of a ſanguine Complexion, adult, or ap-

* See P. 249.

approaching towards Puberty; and no ſuch Itching of the Noſe, as pretty certainly preſaged an imminent Hæmorrhage, Bleeding ſhould be directed, and the Foot certainly preferred for it: after which dry Frictions will be likely to invite a Plenitude of the Veſſels, and an open perſpiratory State of the Integuments there, which looſe Flannel, or Worſted Stockings may further conduce to; unleſs the Heat of the Weather ſhould make them rather inconvenient, from their increaſing the Heat of the whole Body too much, and thence inclining a larger Proportion to the Head.

If the *Nauſea* and Puking be moderate, and accompanied with little Orgaſm, I ſhould ſcarcely recommend a Vomit; or only ſome warm Water, or light Green Tea to dilute, and diſcharge the irritating Contents of the Stomach. I am apprehenſive that too unguarded a Recourſe to them may tend to preſs up an extraordinary Proportion of the ſtimulating Blood to the Brain. And yet if the Patients were bilious, the Contents puked up conſiderably ſo, and ſomewhat viſcous withal, like the Yolk of an Egg; I ſhould be for directing a Puke of Ipecacuanna, or its Tincture and Oxymel of Squills, with reaſonable Dilution in the Operation, which would be the better, if it terminated in a free Stool. But, very generally ſpeaking, this will not be indicated from Inoculation; and to confeſs, what may be erroneous perhaps, I have a further Suſpicion of that Commotion, which may enſue from a Vomit in this

critical Effervescence of the Blood. The Evacuation, abstracted from such Commotion, where bilious, must be serviceable. But a moderate *Nausea* and Puking generally vanish upon the earliest Eruption.

Opiates are rarely indicated before Eruption is compleat, and should not be given, (which has been already mentioned) 'till indicated from considerable Soreness, slow Suppuration, obstinate Wakefulness, and a *Delirium* from Want of Rest. If the Patient had formerly taken any, their Agreement or Disagreement with him should be previously known. And this may suffice for the Appearance and Treatment of the ordinary Symptoms of the Small Pox by Inoculation; when the Impressions of the *Virus* are chiefly exerted on the Blood, and thence on its Vessels. But when very different Appearances result from its Confinement to the nervous System, an oppofite Conduct must be equally rational.

It is one advantageous Circumstance of Inoculation, that whatever Symptoms succeed about the ordinary Term of sickening after it, we run next to no Hazard of mistaking their Cause, which we might, if arising from an unsuspected Infection. But a Mistake of it in nervous Symptoms might happen more easily, and fatally too, than from inflammatory ones: as most People, and even some Physicians, are too apt to recur to Bleeding in all Convulsions, without attending to the various, and even oppofite, Causes on which they may depend; and Bleeding in the former Symptoms might be truly pernicious. We

We had already obſerved * the contrary Practice of SYDENHAM in ſuch convulſive Inſults, by giving a Cordial and applying a Bliſter, which is doubtleſs preferable. And yet in my preſent Sentiments, where I found a competent Fever with a pretty firm Pulſe, which did not exiſt before the Convulſion, ſucceed to it; I ſhould be apt to ſuſpend the immediate Application of the Bliſter, from a Suppoſition that the Convulſion had done its Office, and exploded the variolous *Miaſmata* from the Brain and Nerves into the Blood; the heterogeneous Texture of ſuch *Miaſmata* in their Cavities ſeeming no inadequate Cauſe of ſuch Convulſions. My eldeſt Son, inoculated at about eleven Years of Age, had a ſtrong Convulſion in the *Apparatus*. As he was coſtive a Clyſter was injected, which produced one free Stool. A ſmart Fever aroſe a little after the Fit, and exerted a large Crop of thẽ diſtinct Small Pox. In the manifeſtly inflammatory *Apparatus* of this Diſeaſe Bliſters, and hot Cordials, appear, to me, as ſtrongly contraindicated as any Thing in the *Materia medica* can be. It ſeems as abſurd as it would be to ſet a Liquor, which was ready to burſt its Veſſel, or waſte itſelf in a diſſipating Fermentation, by or over the Fire to reſtrain it. It is not denied however, that as ſuch Convulſions generally precede the diſtinct Pock in Children, the Bliſter and Cordial are neceſſary, if the eruptive Fever ſhould not ſoon follow; and if it did, they

* See P. 80.

would be leſs pernicious than in a high ſanguineous Infection and Orgaſm, where they have too often been very erroneouſly applied.

But where the Patient, inſtead of ſuch Convulſion (which Nature may ſometimes uſe as an Expedient to relieve the Nerves, as ſhe does a Fever to defæcate the Blood) lay torpid, comatoſe and relaxed, doubtleſs ſpeedy and potent Stimulation is called for. To this Purpoſe a quick Emetic ſhould be got down, to produce a particular temporary Convulſion, which, tho' a nervous Affection, may be contraſted to the former; the Benefit from the Emetic in this State being expected from its Agitation; the very Circumſtance ſuſpected in the inflammatory one, where its good Effects were expected from the bilious Evacuation. Nevertheleſs, if the Belly had been dry for ſome Days here, with a Tenſion of the *Abdomen* and *Hypochondria*, a warm ſtimulant Clyſter ſhould be injected. A ſharp Bliſter ſhould be applied to the Neck, or between the *Scapulae*, a generous Cordial ſhould be given; and, if theſe failed to excite the Patient in a few Hours, *Solearia* of Garlick and Salt ſhould be applied, of which I have repeatedly known the good Effects, where Stimulation was neceſſary. Such a Situation however is very rare by Infection in either Way: but as I have ſeen it I mention it, and what appears to me its moſt rational Treatment, if it ſhould happen. This was by natural Infection; a very gentle Eruption enſued, and the Patient did well.

I never ſaw one of the Inoculated in this torpid comatoſe *Apparatus*; but Fits are not ſo unuſual to them. Such a Caſe has been already * given, where they were very violent, and attended with the Loſs of Speech for three Months, of Limbs for many more. And Mr. RANBY has lately obliged me with that of a Child inoculated at the Age of ſeven. Fits were the very firſt Symptom, which continued throughout Eruption, and during the State of Maturation too, tho' more remiſſly than before Eruption, which was favourable, with a moderate Fever; and tho' the Child continued weaker than uſual for ſix or ſeven Weeks, it is ſince vegete and healthy. As I ſaw neither of theſe inoculated Patients, it is impoſſible for me to compare their different Quantity of Eruption and Suppuration: but as the enſuing Debility of the Nerves was of a ſhorter Duration in this laſt Caſe, we may ſuppoſe the Blood came in for a greater Proportion of Infection.

It has been obſerved in a former Section, that the ſecondary Fever rarely occurs by Inoculation, and that where it does, the Tumult is comparatively ſhort and light. Such a Degree of it I have more than once ſeen in the more adult Subjects of this Practice; and have ſometimes adviſed a pleaſant temperate Cordial; a little genuine Canary alone, or diluted, is a very good one. In Caſe of a long previous Coſtiveneſs I have adviſed ſuch a Clyſter, as would be likely to produce

* See P. 77.

duce one free Stool, and if a ſecond followed it might not be the worſe. I ſhould be cautious however of producing a Super-purgation at this Time, even tho' the Puſtules were turned in the Face; as I have ſeen, and heard of, ſome fatal Inſtances of purging being encouraged then, in the natural Diſeaſe, on Dr. FRIEND's Authority I ſuppoſe, but, as I apprehend, without his Judgment. To the writing of this I never ſaw an inoculated Patient ſink under the ſecondary Fever; where they have, it has probably been more intenſe. But as I am hitherto unacquainted with any other Medicine or Method for the Cure of this, ſometimes, irremediable Symptom, than what may occur to any rational Phyſician; ſo I declare I have very often found little or no Medicine indicated throughout the artificial Diſeaſe; which, whether it promoted or retarded the Practice, might be ſuppoſed to render it very palatable, at leaſt to the Patient. Nevertheleſs reiterated Purging ſhould never be omitted after the Diſtemper, however contracted; except the Loſs of Motion or other nervous Debilities ſhould indicate a very different Treatment; even in which Situation a little Rhubarb might be exhibited once, or perhaps twice, merely to empty the alimentary Canal.

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SECTION XI.

Of the Direction and Oeconomy of Inoculation.

THOUGH ſome Miſunderſtandings have aroſe between our eminent Phyſicians and Surgeons here, touching the ſpecific Profeſſion to which the Practice and Emoluments of Inoculation rightly belong; were it very clear that the Community had no Intereſt in the Iſſue of the Debate, I could gladly have declined interpoſing any private Sentiments on ſo invidious an Occaſion; where the moſt impartial Conſideration of the Matter may be likelier to diſguſt each Party, than to gratify either. But ſince we have certain Accounts that the Populace, who were at firſt ſtrongly prepoſſeſſed againſt this Practice, and who ſo rarely ſtop at the golden Mean, are ruſhing into the contrary Extreme; and go promiſcuouſly from different Diſtances to little Market Towns, where, without any medical Advice, and very little Conſideration, they procure Inoculation from ſome Operator, too often as crude and thoughtleſs as themſelves; congratulating

tulating each other after it over ſtrong Liquor; and returning immediately to their ordinary Labour and Way of living: And ſince ſuch Ignorance and Temerity cannot fail to diſhonour and obſtruct this (when rightly conducted) moſt uſeful Practice, by an unuſual Mortality of the Inoculated, a Diſquiſition on the Oeconomy of Inoculation becomes ſeaſonable and neceſſary.

Here then, while I endeavour at an equitable Survey of the Pretenſions of the different Branches of internal and external Healing, to the ſole, or conjunct, Exerciſe of this Practice, I ſhall conſider them in that juſt Subordination to the Public Health, to which they ſhould both be rendered as ſubſervient as poſſible, and find the private Emolument of each proportioned to their Public Utility; a Point in which every good Citizen, of every Profeſſion, muſt concur. As far as I am capable of penetrating into my own Intentions, I can truly aver, that identical Practice of Inoculation, which would moſt durably and effectually conſult the Health of the whole Community, the whole Species, with Regard to this Diſeaſe, muſt fix my Suffrage. Nor can I diſcern much Merit in ſuch a Determination, as muſt conduce to the inward Satisfaction, that moſt durable Intereſt, of every truly reflecting Man; who cannot be ſuppoſed to put all the Wealth and Honour, that might accrue to him throughout a precarious and fleeting Life, in Competition with the Conſciouſneſs of a diffuſive Benevolence to his liv-

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ing Species, and the Contingence of his poſthumous Services to their Poſterity.

It has been already premiſed, that the certain Author of this great Diſcovery had been hitherto uninveſtigable; and that the firſt Hint might be caſual, which is not improbable of that analogous Operation on Trees, from which it is named; not without a happy Reſemblance between the Melioration of the Fruit and Mitigation of the Diſeaſe. As the Profeſſion then of the Diſcoverer, which might be fancied to confer ſome Right, is uncertain, ſo is the Sex too. But were Poſſeſſion in ſuch a Caſe to infer Right, we know that a Phyſician or two found as many Women in the Exerciſe of it; the Doctors informing themſelves, and us, from theſe Matrons, but not without ſome improving Hints of their own. I would by no Means infer from hence ſuch a ſtrict Coalition of Phyſic and Anility, notwithſtanding a few modern Specimens of it, as to inveſt them jointly or ſeverally with an excluſive Right to the Emoluments of Inoculation. But to be very ſerious, a Reflection on the probable Qualifications of theſe early female Inoculators may admoniſh any Perſons, who are too zealous to incloſe the Common, that ſuch Zeal has a natural Tendency to lay it ſtill more open. For if illiterate Women in *Turkey*, and Negroes in * *Africa*, can ſafely diſpoſe for, effect, and conduct Inoculation, which is reaſonably atteſted, the ob-

* See *Colman*'s Narrative, P. 35.

obvious Inference will be — Who cannot? And accordingly we find the Claim not wholly dropt by Perſons of both Sexes, who, in Reſpect of Phyſic, Surgery, and Pharmacy too, may be conſidered as utter Läics. We have mentioned the Proprietor, who was a Planter, inoculating his 300 Slaves, at St. *Kitt*'s, himſelf, *ſuis ipſe manibus*, as Dr. MEAD ſays. Mr. DANIEL of *South Carolina* inoculated forty, of whom one miſt taking. Dr. JURIN had informed us long before this, that Mrs. RINGE inoculated four at *Shaftſbury*, and Mrs. ROBERTS five near *Leiceſter*; nor have we the leaſt Intimation of a ſingle Miſcarriage among them all. In brief the equal Simplicity and Succeſs of this Practice refers a truly reflecting Mind to the Goodneſs of Providence, in making, what may be ſo often neceſſary, ſo eaſily attainable; and bids us eſpecially apply to our own Species, what has been obſerved of the whole animal Creation — 'Nature's Children all divide her Care' — That the Procedure of human Love is ordinarily much more contracted proves the Foundation of the preſent Miſunderſtanding between the different, tho' collateral Profeſſions; and is a Source of the frequent Want of Candour and Liberality between Members of the very ſame.

But having juſtly ſpecified thoſe many ſucceſsful Inſtances of popular Inoculation, as it may be termed perhaps; if there be any Force in what we have ſaid on the frequent Expedience, and occaſional

ſional Neceſſity, of Preparation, the Advice of ſome ſkilful and honeſt Auxiliary muſt be as frequently prudent before Inoculation; and the plain Queſtion is, what Profeſſion is then auxiliary? which as plainly anſwers itſelf. For tho' I have no Doubt of many ſenſible and experienced Surgeons or Apothecaries, preparing different Bodies to better Purpoſe, than as many nominal Phyſicians; yet this is deſcending to the Talents and Opportunities of Individuals, which will greatly vary; and not diſtinguiſhing the different Attainments that are the ſpecific Objects of medical, chirurgical, and pharmaceutic Purſuits: as we muſt ſuppoſe, *caeteris paribus*, each Perſon to be moſt knowing in that Branch he has ſolely purſued. PYLARINI ſays, that Inoculation being duly applied, and in Bodies properly prepared by a ſkilful Phyſician, proves abſolutely ſafe; and concludes, that this indeed ſhould be reckoned of very great Conſequence, in order to bring the Diſtemper to a ſafe and happy Iſſue. And doubtleſs a judicious medical Prediſpoſition of the Body, to be inoculated, may often prevent the Neceſſity of the Phyſicians Attendance in the ſubſequent Diſeaſe; and muſt eaſe the unpreſcribing Surgeon, who has made proper Inciſions, of all Cenſure, in Caſe of an ill *Cataſtrophe*.

When we are prepared however for the Operation, or judged very happily diſpoſed for it, no one has ever conteſted the proper Intervention of

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the Surgeon, whoſe Office it undoubtedly is, notwithſtanding the Facility of it. And that crude Apothecaries or Pſeudo-Surgeons may have done Miſchief even here, I ſuſpect, from having known one of the latter Stamp make ſuch an Inciſion for an Iſſue in a Gentlewoman's Leg, that it diſcharged a full half Pint of Blood before it could be ſtopt; which muſt have formed a notable variolous Ulcer. The Province of dreſſing the Inciſions is plainly chirurgical: but I imagine the Number and Situation of them, ſince there may ſometimes be Reaſons for varying both, to lie with the Perſon, who has more particularly conſidered the Patients' Conſtitution and this Diſtemper: though an amicable Communication between the Phyſician and Surgeon on ſuch Points appears very reaſonable and decent. The inſpecting the State, Conſtitution and Small Pox of the Subject, the Matter is to be taken from, muſt alſo be the Phyſician's Care; as the Surgeon is to judge of the requiſite Conſiſtence and Maturation of it. The Phyſician is conceived to diſpoſe the Habit into ſuch a temperate State, the Humours into ſuch a bland one, as to afford a good Suppuration. This State we are to ſuppoſe the infuſed *Virus* gradually perverting; but as a free Diſcharge from the Inciſions has been very generally thought ſerviceable, the Art of Surgery is to promote it, and chiefly in the moſt ſuſpicious Subjects of the Diſeaſe; the diſtinguiſhing of which Subjects lying again upon the Phyſician

ſician evinces the Expedience of their frank and amicable Intercourſe, for the Benefit of their common Patient. Briefly, the proper Diſpoſition of a Body for the Reception of an acute Diſeaſe is a Matter of medical Conſideration. An Iſſue, Wound, or viſible Ulcer are the Subjects of chirurgical Application.

With Regard to the Share of Apothecaries, as ſuch, in Inoculation; tho' ſeveral of them, I believe, have ſafely conducted many thro' it, it is manifeſt that in preparing the Body for the Diſeaſe, and ſending Medicines of their own directing in it, they aſſume the Phyſician, in cutting and dreſſing, the Surgeon: when it is very obvious, that the ſtrict and regular Conveyance of this Diſeaſe in *London* is quadripartite, as a Lawyer might term it; where the Phyſician ſhould prepare and preſcribe; the Surgeon cut, infuſe, and dreſs; and the Apothecary faithfully compound for the Party inoculated; to whom they may ſtill be ſaid, as in *Wales*, to ſell the Small Pox; tho' in more Form indeed, and Forms the Law alſo demonſtrates to be expenſive Things. Whether it happened from the laſt Conſideration, that Phyſicians have been conſulted about a Minority, perhaps, of all the Inoculated, may deſerve their own Reflection. But to whatever Cauſe it was owing, our propoſed Hiſtory of Inoculation obliges us impartially to acknowlege, that tho' the moſt eminent Phyſicians were conſulted at firſt, with Regard to the Introduction and Practice of this Method,

there appears to have been a pretty early Diſuſe of them in it. Mr. HOWGRAVE, an Apothecary, who publiſhed his *Reaſons againſt Inoculation* in 1724, at the Cloſe of ſome Reflections he makes on the Death of the EARL of *Sunderland*'s Son, who was inoculated, affirms P. 53 *verbatim*, as follows:

'There are five Perſons ſigned the Certificate [he means of Maſter SPENCER's diſſected Body] 'and not one Phyſician amongſt them. At my 'firſt reading it I thought this very extraor- 'dinary, that the Son of the Right Honourable 'the late Earl of *Sunderland*, ſhould not have 'one Phyſician to attend him, or if he had, that 'none of thoſe Gentlemen ſhould likewiſe ſign 'the Certificate. But I have been informed, 'from a moſt undeniable Authority, that after 'this Child's Death, Mr. AMYAND drew up a 'Paper, in which he affirms the Child died of a 'Water in the Head, and not of the Small Pox, 'and went from a great Perſon, to three of the 'moſt eminent Phyſicians in Town to ſign it, 'but they none of them did. When this or 'any other of my Accounts are called in Queſ- 'tion, I ſhall be ready to produce my Vouchers. 'Why the Phyſicians refuſed to ſign it I will not 'preſume to ſay, but I think it is ſo plain of it- 'ſelf, that I need ſay no more of it.' As we have met with no Contradiction of this in any ſubſequent Writer on the Subject, we muſt conclude, as indeed it appears, that no Phyſician ſigned the Certificate, which it is probable any

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previouſly conſulted Phyſician would, for his own Sake. Whence it may be concluded, the Omiſſion of ſuch Advice muſt be owing, either to his Lordſhip's own Opinion, or that of ſome Perſon in Repute with him, that it was not neceſſary. The fatal Event however reflected little Honour on the Omiſſion: For tho' the Child might have died, whatever Phyſician, or how many ſoever, prepared and attended him; yet as it was impoſſible to demonſtrate, that they might not either diſcover and remove his conſtitutional Unfitneſs for the Small Pox; or have diſſuaded the Operation, if they thought it irremoveable, the Omiſſion of Advice, in a Patient of ſuch Condition too, was imprudent in itſelf; it might be unfortunate for the Patient; certainly was diſcreditable to the Operator; and probably proved injurious to the Practice, from more Reaſons beſides its Fatality in this Inſtance.

It is but too natural to ſuppoſe, that ſo early a Tendency of the Profits from Inoculation into one Chanel might co-operate with a few Deaths of the Inoculated, to the enſuing Stagnation of it for many Years. Every Phyſician, who might approve the Practice, would not be over zealous to promote one, where he found his preparatory Advice towards it excluded; when the generally comparative Mildneſs of the enſuing Diſeaſe oftner rendered his Attendance leſs neceſſary, than that from common Infection. The few Medicines required in Conſequence of Inoculation (and we may ſuppoſe the Operator, when alone,

not too profuſe of preſcribing, which may often be very right and convenient) could not diſpoſe the Apothecaries to recommend this Method, excepting they aſſumed the Phyſician, Surgeon, or both. Where neither of theſe was the Caſe, they would be apt to reflect, with particular Reſentment againſt the Operator, and his Operation, that in the natural Diſtemper either a Phyſician was called in, which of Courſe employed them more or leſs: that, if a Phyſician was diſpenſed with, they were ſent for; or in mild Caſes and poor Patients, ſometimes a Nurſe, at other Times no Body was employed, a Surgeon never being recurred to in it, except Bleeding was preſcribed, and very ſeldom where they directed it. But ſuppoſing ſuch very alarming Symptoms to occur, that the Patient, Operator, or both, ſhould deſire a Phyſician's Attendance, a right Notion of this Diſeaſe muſt ſuggeſt, that as the greateſt Service done in the natural Small Pox is almoſt ever effected before, or in the Infancy of, Eruption; ſo in the artificial, the Foundation of a happy Event is to be laid before Infection: ſince there is no other Diſtemper to which the *Principiis obſta* and *ſerò medicina paratur* are more ſtrictly applicable. This, in plainer Terms, the Phyſician might ſignify, eſpecially where he thought a Miſcarriage likely to enſue; as he would be apt to ſuppoſe, at leaſt, he could have prepared againſt ſuch Symptoms as he could not remove. Such an Intimation would be a very indifferent Cordial to the Patient;

tient; but unpalatable to the Operator; and, if a Fatality enſued, muſt diſguſt the Friends of the Deceaſed; while it preſented thoſe who conſidered their Profeſſion as neglected, their Trade reſtrained, with an Opportunity of indulging their Reſentment.

Thus it appears very obviouſly deducible, that the general Intereſt of Phyſicians and Apothecaries might have concurred, with the Miſcarriages by Inoculation, to fortify and extend vulgar Prejudices, and to leave the natural Diſeaſe to its ordinary Courſe and Havock; which, while it mulcted the Inoculators, was more advantagious to the former, though it deſtroyed many Subjects, a great Majority of whom, from all moral Appearance, muſt have been ſaved by perſiſting in the Practice. I do not ſuppoſe ſome Phyſicians and Apothecaries might not be ſuch abſtracted Lovers of their Species, as to recommend the very Method they might be no Gainers, or even Loſers, by: but we are reflecting what the Conduct of a Majority would moſt probably be; ſince different Profeſſions do not cancel, and but rarely affect, the leading Principles of Men. It muſt be confeſſed it was no Merit, no Self-denial in the Surgeons, while Phyſicians declined to cut and dreſs, to be good Friends to ſo friendly a Practice; but, whatever Horror the Reflexion gives me, I am convinced there have been and are Phyſicians, who wiſh it had never reached us. Some of theſe from having vulgar Capacities (to the Misfortune of their Patients) might

mean well, though they acted from vulgar Prejudices. But others, who were better qualified, grew lukewarm in the Promotion of what they had thoroughly considered and certainly approved; a Gentleman of this Sort having given me his Opinion, that it was not worth the Time of a Physician to attend much to the Subject, as the Practice of it had all fallen into a different Chanel. There might be some Fact in this; and tho' it is also true, that a Physician has the least Occasion to be attentive to what he has the least Expectation of being consulted about; it may be queried, how far a truly reflecting one could acquiesce in his Indifference for the Establishment of a medical Practice, he judged essentially vital, because it became less lucrative to himself. Such Faculties and Attainments, and such Integrity, as must combine in the truly valuable Physician, would dispose us to expect a more ingenuous Conduct. The Integrity and public Spirit of HIPPOCRATES in declining, for the Love of his Country, all the Wealth and Honours ARTAXERXES proffered him is an illustrious Precedent for his Successors; as his laconic Epistle to DEMETRIUS on that Occasion, in which he observes, (a) ARTAXERXES was ignorant he prefered the Attainment of Wisdom to Riches, was strictly philosophical. But such an Authority may be thought obsolete, or read like a Legend

(a) Βασιλὰς Περσεῶν ἡμεας μεταπεμπεται, ἀκ εἰδως ὁτι λογος ἐμοι σοφιης χρυσε πλεον δυναται.

Ex Edit, Föesii. P. 1272.

gend now; and doubtleſs as Self-love is the great Principle of human Action, good, as well as bad, Society, upon the whole, have ſome Intereſt in each Individual's natural Attachment to his own.

And even on the Principle of Self-Intereſt, I conceive the Diſſention of Phyſick and Surgery here was deſtructive (which Time may further demonſtrate) of their durable common Intereſt on this Occaſion: ſince to prevent popular Inoculation, as I have been forced to term it, it would have been politic to allow it its full Importance, and to preſerve it in all that Formality which impreſſes the Multitude. For if the Phyſician ſhould make ſo ſlight of the Operation, as to ſay any Body might do it, and the old Woman had; the Surgeon might as truly retort, that ſhe had alſo prepared them, and conducted them through the Diſeaſe without Phyſick, for any Thing that appears to the contrary. It muſt be left to the Election then of thoſe to be inoculated, or their Friends, to determine, whether they ſhould retain both of them, but one, and which; or whether they ſhould reinſtate the old Woman again, and let the Nurſe be a *Succedaneum* to them both. Nor is it unlikely that, from moderate Circumſtances in ſome, and unneceſſary Frugality in others, the good Lady might have a frequent Preference. I frankly acknowlege my own Opinion, that, even thus circumſtanced, Inoculation would be uſeful to the Publick, upon the whole, ſince many had better be inoculated by any one than have it omitted: yet conſidering the

great Number of rich Conſtitutions here, ill diſpoſed for this Diſeaſe; the Neceſſity of correcting ſuch ill Diſpoſition; and the Inability of the moſt ſenſible Woman to correct it (who might be the leaſt forward to aſſume it too) the Miſcarriages that muſt be multiplied in a little Time by a Miſapplication and ill Oeconomy of the Practice would either extinguiſh, contract, or otherwiſe revert it into the medico-chirurgical Chanel it firſt flowed through among us. And indeed after the moſt cool and impartial Reflections in my Power on this Occaſion, it appears reaſonable to me, that this very Conduct of it here is likely to be attended with the feweſt Miſcarriages; which, beſides their immediate Advantage to theſe Cities, will be pregnant with that of a more extenſive and more experienced Eſtabliſhment of the Practice; while it ſeems the faireſt Diſtribution of the Employment attending it amongſt Phyſick, Surgery and Pharmacy, which may be of ſome ſubordinate Import to the Publick too. Nevertheleſs I would always gladly ſuppoſe, that 'till the Fund of the Inoculation Hoſpital is ſufficient to receive all proper Objects of it, there will be Phyſicians and Surgeons of ſufficient Humanity to ſuffer no one who prefers Inoculation, and can make a Shift to accommodate themſelves under it, to want its proper Application, for want of Ability to pay for it. And this may be the rather expected, as the Attendance very eſſentially neceſſary will be generally ſmall, and the Medicines ſo few, that any conſiderate

ſiderate Apothecary, who would, on ſuch Occaſions, reduce them to near the prime Coſt, could not fail of being thankfully paid for them.

But if it be the durable Intereſt of Phyſick and Surgery, in *London*, not to depretiate this Practice by any future Animoſity about it, it is manifeſtly for the Honour of Perſons, whoſe Conduct, like their Profeſſions, ſhould be liberal. If BARTHOLINE, in addreſſing his Brother, a Civilian, could obſerve a *communis nexus ſcientiarum*, as ſome Connexion between Law and Phyſick, how much cloſer muſt that between Phyſick Surgery and even Pharmacy be, which were both (or all perhaps) profeſſed by HIPPOCRATES, CELSUS and many famous Antients; are at preſent united in ſome very eminent Men abroad and at home; and in many Places neceſſarily combined to the Convenience of Numbers. Then beſides the inconteſtable Utility of Surgery (whoſe Diagnoſtics are often more evident, whoſe Prognoſtics ſometimes leſs conjectural than thoſe of internal Diſeaſes) an ingenious Surgeon might have an intellectual Superiority of me, which my different Attainments might not counterbalance. But where this were otherwiſe, with Reſpect to other Phyſicians, methinks there is an odious Impoliteneſs and Illiberality in aſſuming the utmoſt, which the beſt Talents and Attainments may, with ſome Juſtice, claim. Various and odd Characters there certainly are in human Nature; as one of which there may ſometimes occur a Combination of Pride and Science.

ence. Such I have heard of; but am inclined to conſider them only as a few Exceptions to the more general and amiable Union of Science and Modeſty. The former ſeem to me incumbered with ſome Miſ-apprehenſion of themſelves, or ſome Miſtakes concerning Science; ſince a conſiderable Portion of what we call ſuch appears neceſſary to let us into the ſuperficial Quality of our deepeſt. In fine, in Profeſſions ſo contiguous, and ſo antiently united, a few ſlight and reciprocal Incurſions would be overlooked now and then, from particular Accidents, or from the Swarms in either ſtretching them a little out of Bounds; for the moſt uſeful Profeſſions, like the richeſt Paſtures, may be overſtocked: But in a general Invaſion both Parties would do well to recollect and apply the Fable of ANAXAGORAS concerning the Origin of Love, which ſuppoſes, 'That both the Sexes were at firſt completely blended in one animated Body; but that being afterwards diſtinguiſhed into two, and ſeparated by the Will of Fate, the former Halves became very ſolicitous to find each other out, and reſume their primitive Union.' Now perhaps ſuch a Coalition of theſe two Profeſſions here would be little advantagious for either: but it will admit of no Debate, whether the Publick muſt not be leſs completely ſerved by them in their conjoint, than in their diſtinct, Capacity; a Point of much more general Import, than a little Shifting and Variation of Property between the two Profeſſions, or any Individuals compoſing them.

Thus

Thus far of the Oeconomy of Inoculation within theſe great Cities and the Borough, where ſuch a conſiderable Proportion of the People of *England*, and ſo very important a Part too, frequently reſide; that when they were much leſs extended and populous, the Crown thought fit to conſtitute a College of the Faculty, as Guardians of the Public Health, and Judges of thoſe Qualifications requiſite to be intruſted with the Care of it, within certain circumjacent Boundaries. The ſame Manner of conducting Inoculation muſt be ſimilarly adapted to other large and populous Cities, where the Multitude and Wealth of the Inhabitants are ſufficient to employ and ſupport the Profeſſions diſtinctly: from which Circumſtance we find the moſt eminent Members of each frequently recurred to at great Diſtances from the Metropolis; People naturally conſidering ſuch a Diſtinction as productive of greater Experience, and more conſummate Accompliſhment to each, in their different Profeſſions: which ſometimes extends ſo far, as to give Individuals a Preference in different Diſeaſes, and for different Operations.

But when we come to remote and ſmall Places, thin and young Settlements, the Oeconomy of Inoculation muſt neceſſarily vary. And as People thus circumſtanced can ſcarcely be as well aſſiſted as the former, it is certain I ſhall miſcarry in a conſiderable Purpoſe of this Treatiſe, if it ſhould never reach ſuch, or prove of little

little Uſe, tho' it ſhould. We are not without Inſtances here and abroad of Crudity and Miſconduct in the Application of this great Diſcovery. It has been miſapplied to remove ſuch an ill State of the Blood, as indicated its own Removal, before the Patient could be a proper Subject for the Diſeaſe. I have been credibly aſſured, that about three Years ſince a young Apothecary in *Dorſetſhire*, after inoculating ſeveral, who recovered in ſpite of his Ignorance, inoculated two Children in the ſame Family, who proving fatally infected, he ſaid, an Hour before their Deceaſe, they were froward and wanted Correction. This requires no Comment. Another Country Apothecary, who has, ſince that, attended a young Gentleman to *London*, to be inoculated under the Advice of an eminent Phyſician, which ſucceeded happily, declared, that on his Return he would inoculate all the Country round him: And indeed if this Adventurer has had that Phyſician's Ability and Erudition infuſed into him from this ſingle Caſe, his Country muſt be obliged to him, when his Intention is equally accompliſhed. Now a few ſucceſsful Inſtances will be ſufficient to convince ſuch a Head-piece, that it may always be done as ſafely and eaſily as ſnapping his Fingers. But if he ſhould not be diſpoſed to take Warning by his Brother of *Dorſetſhire*, he may blunder on juſt ſuch froward Patients in his own Vicinage, and huſh them as effectually. And tho' I have no Doubt even of Bunglers doing more Good than

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Miſchief by Inoculation, upon the whole; yet it is an Alloy to the great Advantage of it, that it muſt be ſometimes committed to the Management of thoſe, who are moſt likely to diſcredit it. The beſt and briefeſt Advice I can recommend to ſuch, as are leſs qualified to profit by a great deal, is, that they would be careful *not to over do*, or to expect great Effects from much Medicine, when the Diſeaſe is formed: ſince Inoculation tolerably enterprized, and little diſturbed, often does great Things of itſelf. I would not be ſuppoſed however to intend any general Reflection on Country Practitioners, many of whom I believe to be rational, diligent, uſeful Men; who may have ſeen too much Room for Improvement in others. And this is no more than what ſometimes happens here and every where, in every Profeſſion, and every Branch of it.

Each Country Surgeon and Apothecary, who ſingly undertakes the whole of Inoculation, ſhould inform himſelf carefully of the beſt Conduct in the natural Diſeaſe, from SYDENHAM, BOERHAAVE, and ſuch good Authors, if he had not previouſly done it. Even Phyſicians, who have long reſided in Towns unviſited by the Small Pox for many Years, may judge it prudent to refreſh their Memories in the ſame Manner, on the Introduction of it; and to reflect on the different Conſequences of its accidental and ſpontaneous Infection. To ſave all ſuch the Time of reading, and the Expence and Difficulty of collecting, a great deal more relative to the latter

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Method, is a principal Purpoſe of this Treatiſe; in which, beſides what is profeſſed Compilation, the Author has riſqued many Sentiments (ſome few very novell) of his own; in a Manner perhaps too little digeſted and methodized for a critical Examination: yet as they certainly have the Merit of a good practical Intention; and a further Conſideration, God willing, may advance them to further Maturity, he is the leſs ſolicitous about any Cenſure that may attend them. For as the candid Dr. FULLER ſays, in his honeſt hearty Phraſe, 'No Man qualified for ſuch an Undertaking ought to be ſo weak-hearted as to refuſe it, for fear of a Scratch in his Credit. He is a poor little ſelfiſh Wretch indeed, that weighs his Name againſt the public Good.' To which I may add, that all the juſt Reproof they meet with muſt terminate in my own Information, except my own Weakneſs prevent it.

As a Matter of real Import to the Publick, and the only weighty Argument I can diſcover againſt Inoculation, I ſhall cloſe the whole with obſerving the obvious Tendency of it to diffuſe the natural Diſeaſe: And where this is not already, the Security even of many, who may very wiſely prefer Inoculation, ſeems not to be put into Competition with that of a Minority, who reject it, and are afraid of the Small Pox. People have, I conceive, an undoubted natural Right to uſe a Method diſcovered by Providence for their own vital Security; but not at the vital Riſque of a Neighbour, who ſuppoſes differently

of

of it. No Perſon then I think ſhould inoculate, or bring the Matter, or *Effluvia* of it, into any Place of Reſort, where the Diſeaſe does not exiſt: Villages are ſaid to have been deſerted, and Markets deſtroyed, from the Apprehenſion of it. It is prudent nevertheleſs to prepare for it in an uninfected Place, which cannot injure the Neighbourhood. And after the Patient is inoculated near any large City, which we may ſuppoſe at ſome times a pretty diffuſe, and, at others, a more concentered Sphere of Infection; upon the Patients Recovery and retiring for Air afterwards, a Reflection on the ſurprizing and untraceable Progreſs of Contagion would induce a humane one, eſpecially if his Diſtemper had run high, to reſide in no Houſe with any freſh Subjects of the Diſeaſe.

Were this Practice once extended into a Cuſtom of inoculating all, that ſhould attain the Age of five (excepting ſuch morbid Children, as ſhould be deemed proper Exceptions to it) the different Increaſe of the People, *caeteris paribus*, muſt be very ſenſible before the Expiration of a Century: and ſome convenient Places and Contrivances would of Courſe be provided for it. But as our Faculties and Tempers, as well as Bodies are ſo variouſly conſtituted (doubtleſs for the moſt wiſe and harmonious Purpoſes) that the whole People will ſcarcely ever unite in the Admiſſion of it; if there were, at an uncontagious Diſtance from each large and populous Town, ſuppoſe the Capital of each County, a ſuitable

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Reception, after the Manner of the Inoculating Hoſpital, that ſhould, when the Small Pox was in the Town, admit as many as choſe to be inoculated (after they had been duly prepared elſewhere) at a reaſonable Expence: and, which were ſtill more deſirable, to receive thoſe Volunteers who could not pay (if a moderate Fund could be raiſed in each County for ſuch indigent Natives and Reſidents in it) and to have them well aired for a reaſonable Time after their Recovery, before their Return to their uninfected Places of Reſidence: Such an Expedient, I imagine, prudently executed, might be effectual to the Preſervation of great Numbers, without hazarding the Life, or Health, of any one beſides. But ſo intereſting an Event calls for the hearty concurrent Agency of many, though the improvable Hint might obviouſly occur to any one. In the mean Time it will be but charitable and prudent in all Practitioners, to accommodate the Practice to the humbleſt Circumſtances of their Neighbours.

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FINIS.

ERRATA.

Page 25. Line 28. for *Wive's* read *Wife's.*
P. 37. l. 19. for *ſeperately* read *ſeparately.*
P. 45. l. 26. dele *rationelle.*
P. 62. l. 21. for *Valetudirian* read *Valetudinarian.*
P. 96. l. 9. for *Fauters* read *Fautors.*
P. 172. l. 26. for *Paralell* read *Parallel.*
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